

Chapter IX.7

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

OLDMANS TOWNSHIP CHAPTER

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Sickels & Associates, Inc.

***Wastewater Management Plan for
Salem County, New Jersey
Oldmans Township Chapter***

I. INTRODUCTION

This chapter represents the Oldmans 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 Oldmans includes the entire township's area of 12,814 acres (20.0 square miles). The planning area does not include any areas that lay within adjacent municipalities.

The Township of Oldmans 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 of Oldmans is mainly an agricultural based municipality bounded by the Delaware River to the northwest, and three (3) municipalities including: Pilesgrove Township to the southeast, Carneys Point Township (to the southwest), and Logan Township of Gloucester County (bounded by Oldmans Creek along the northeast of the municipality). Oldmans Township encompasses a total area of 12,814 acres (20.02 square miles) including approximately 146.2 acres of surface water (ponds, lakes, reservoirs) and 59.7 miles of streams (shown in Map No.1) flowing in the municipality. This municipality is largely undeveloped, though commercial, industrial, and residential developments can be found throughout the central region of the municipality bounded by Rt.130, Railroad Avenue, I-295, and Perkintown Road. Other than this region, the land is mostly forested or wetlands, used as public area or as residential/agricultural plots. For this reason, the Oldmans Township has one of the lowest population densities in Salem County (approximately 90 people/sq mi), according to (2010) U.S. Census data. The remaining land area for future development consists of infill parcels and larger parcels to the south of Grieves Parkway.

Oldmans Township has a population of 1,773 persons. The municipality's population trend over the last decade can be seen as a -1.39% decrease in population each year (-13.9% 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 the Township of Oldmans. In terms of population change over the next three decades, Oldmans Township is expected to have steady slow growth according to the most recent study by the South Jersey Transportation Planning Organization, prepared in 2011. A summary of the SJTPO projected population can be found in Table 1.2:

Table 1.1: Oldmans Township- Historic Population				Table 1.2: Oldmans Township- Projected Population			
Year	Population	Population Change		Year	Population	Population Change	
		#	avg yearly %			#	avg yearly %
1980	1,847			2010*	1,773		
1990	1,683	-164	-0.89%	2020	1,785	12	0.07%
2000	1,798	115	0.68%	2030	1,796	11	0.06%
2010*	1,773	-25	-0.14%	2040	1,806	10	0.06%

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

~Source: SJTPO, 2011

A. STATUS OF PREVIOUS APPROVED WMPs

The Township of Oldmans has submitted several Wastewater Management Plans (WMP's) / Amendments since 1991. These amendments, submitted in coordination with the Carneys Point Sewerage Authority, have included proposed expansions to an existing industrial WWTF, expansions of the Carneys Point Sewerage Authority (CPSA) SSA to serve small areas in Oldmans Township and the inclusion of the Gateway Business Park.

The current WMP in effect for Oldmans Township is an amendment to the Lower Delaware WQMP submitted on behalf of the Carneys Point Sewerage Authority, which was adopted on July 9, 2001 and associated revision dated July 20, 2007. The enclosed plan reflects current zoning with proposed sewer service areas consistent with the Municipality's Master Plan. The Oldmans 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.

B. CURRENT WASTEWATER SERVICES

The Township of Oldmans is primarily served by individual septic system. Various facilities within Oldmans Township are served by sanitary sewer collection systems. All sanitary flow collected by the system is sent to the Carneys Point Wastewater Treatment Plant for treatment. In all, the Carneys Point Sewerage Authority (CPSA) serves approximately 300 persons within sewer service area located in Oldmans Township. This equates to 0.45 percent of the total Salem County population (66,083 persons, 2010 U.S. Census) that are served by the wastewater treatment plant.

The Carneys Point Sewerage Authority receives flows from the following facilities in Oldmans Township:

- The NJ Turnpike Service Area 1S, Clara Barton.
- The NJ Turnpike Service Area 1N, John Fenwick
- Auburn Village

Sewer service areas may include industrial facilities that discharge process wastewater to the collection system for treatment. The existing sewer service limits, delineated on Map No.2, are maintained by the NJ Turnpike Authority and contribute sanitary flow to the Carneys Point Sewerage Authority system. The limits were derived from existing sanitary sewer infrastructure currently constructed and/or approved. The treatment process and information for the Carneys Point Sewerage Treatment Plant (STP) is located within the Carneys Point municipal chapter.

C. CURRENT WATER SERVICES

The New Jersey American Water Company serves an approximately 1,655 persons within the Oldman Township planning area, and is currently the largest provider of water service to the municipality according to current NJDEP data. This equates to 2.5 percent of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the water provider. In addition, Oldmans Township is also served by the smaller Auburn Village Water Supply, which provides water to approximately 300 persons, or 0.5% percent of the total Salem County population. The remaining population within Oldmans Township is served by individual private water wells.

Oldman's Township does not own or operate its own public community water supply system, and is served by the New Jersey American Water Company (NJAW). NJAW presently draws from seven (7) ground water wells, all located within Carneys Point. Two of the wells pump water from the lower PRM and the other five draw from the upper PRM, 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

Oldmans Township does not currently own or operate a public community water supply system or wastewater treatment plant. The Township's sewer service area is primarily served by the Carneys Point WWTP and 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 Oldmans 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 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 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. Construction of a new treatment facility or interconnection with an existing treatment facility along with the installation of infrastructure will be required to meet the future wastewater generation needs of the municipality, as wastewater treatment facilities are not currently available .

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. This Section is not applicable as Oldmans does not own or operate a wastewater treatment plant. Refer to the Carneys Point municipal chapter regarding information pertaining to the receiving treatment facility.

B. MAJOR TRANSMISSION PIPING AND PUMPING STATIONS

The Township of Oldmans does not own or operate any wastewater treatment or conveyance systems, though areas within the municipality are served by small-scale collection systems. All wastewater generated from collection systems is conveyed to the Carneys Point WWTP via approximately 10.3 miles of force mains and two (2) pump stations. Further discussion of the sanitary sewer system is more clearly defined within the Carneys Point municipal chapter of this report. 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. 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.

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
17	Fort Dix - Pedricktown Sup Fac	NJ0024635	DSW- A	17
18	Oldmans Township School	NJ0137707	DGW-T1	18
19	295 Auto Truck Plaza Inc	NJG0100684	DGW- T1	19

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 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
16	Polyone Corp - Pedricktown	NJ0004286	DSW -B	16

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

This Section is not applicable as Oldmans does not own or operate a wastewater treatment plant or sanitary sewer conveyance system consisting of major interceptors, trunk lines and pumping stations associated with public wastewater treatment facilities.

The existing wastewater flows conveyed to the Carneys Point WWTP were calculated based on information provided by the Carneys Point Sewerage Authority. The present average flow includes residential, commercial and industrial flows. The following Table 2.F.1 summarizes the permitted capacity and associated average daily flows of 2010 for the wastewater treatment plant serving Oldmans Township.

WWTP	NJPDES Permit No.	Permitted Capacity (MGD)	Average Daily Flow 2010 (MGD)	Build-Out Projection (mgd)
Carneys Point WWTP	NJ0021601	1.3	1.069	1.36

The existing average daily flows identified above include wastewater contributed by both Carneys Point and Oldmans Township. The flows from these connections are identified within the Carneys Point municipal chapter or facilities tables provided within Chapter 7 (VII) of this report. Monthly wastewater flow data estimates specific to Oldmans Township are identified for 2010 in Table 2.F.2 below.

Month	Monthly Average Flow to Carneys Point WWTP (MGD)
Jan-10	0.0137
Feb-10	0.0112
Mar-10	0.0131
Apr-10	0.0161
May-10	0.0211
Jun-10	0.0243
Jul-10	0.0279
Aug-10	0.0264
Sep-10	0.0264
Oct-10	0.0281
Nov-10	0.0236
Dec-10	0.0230
Yearly Average	0.021

G. EXISTING WASTEWATER TREATMENT

This Section is not applicable as Oldmans Township does not own or operate a wastewater treatment plant or sanitary sewer conveyance system consisting of major interceptors, trunk lines and pumping stations associated with public wastewater treatment facilities. Refer to the Carneys Point municipal chapter regarding information pertaining to the receiving treatment facility.

H. EXISTING PUBLIC WATER SUPPLY INFRASTRUCTURE

Map No.1 depicts the areas actively served by existing public water supply facilities. Oldmans Township does not own or operate its own public community water supply system, and is primarily served by the New Jersey American Water Company (NJAW). In addition, Oldmans Township is also served by the Auburn Village Water Supply, which provides water to a smaller portion of the municipality. The public water supply infrastructure of this system consists of approximately 11.1 miles of water main ranging in size from 1 - 12 inch diameter.

The following Table 2.H.1 summarizes the potable water well information for the community water supply facilities currently serving this municipality. All wells supplying the NJAW system are located within the Carneys Point Township municipal boundary. The franchise areas are depicted on Map No.1.

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	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

I. EXISTING PUBLIC WATER SUPPLY ALLOCATION AND DAILY DEMANDS

New Jersey American Water (NJAW) is currently the primary source of water to Oldmans Township. 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 systems overall annual demand and the estimated yearly demand for each municipality from 2008 through 2010 has been obtain 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 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 used 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 Oldmans currently has an estimated average daily demand of approximately 0.100 million-gallons per day 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 2008, which is based on the peak month of the system supplier. Estimates of monthly flows to Oldmans Township 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 Oldmans Township 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 Auburn Village Water Supply and the greater New Jersey American Water system (which includes the Borough of Penns Grove and Carneys Point Township as well as Oldmans Township).

Water Company (Breakdown by Municipality)		Permit No. / Program Interest ID	2010 Water Allocation *		Average Demand 2010		Build-Out Projection	
			(MGM)	(MGY)	(MGM)	(MGY)	(MGM)	(MGY)
Auburn Village Water Supply		N/A	N/A	N/A	0.38	4.55	N/A	N/A
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 Township	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 Oldmans Township on the Auburn Village and NJAW water systems. The districts and franchise areas are depicted on Map No.1.

Table 2.I.2: Annual Water Demand Summary				
Service Provider	Year	Annual Demand Total (MGY)	Average Daily Demand (MGD)	Average Monthly Demand (MGM)
Auburn Village Water Supply	2006	5.343	0.015	0.45
	2007	4.836	0.013	0.40
	2008	4.248	0.012	0.35
	2009	3.809	0.010	0.32
	2010	4.552	0.012	0.38
New Jersey American Water	2006	34.800	0.095	2.90
	2007	36.024	0.099	3.00
	2008	33.168	0.091	2.76
	2009	33.295	0.091	2.77
	2010	31.842	0.087	2.65

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 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	July, 2011	
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	7/2/08

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

Table 5.B.1: Summary of Oldmans Municipal Zones

Zone Name	Zone Description	Municipal Area (ac)	SSA Developable Area (ac)
AR	AGRICUTURAL RESIDENTIAL	6,988.2	65.46
C	COMMERCIAL	0.0	14.98
C/I	COMMERCIAL/INDUSTRIAL	1,266.6	339.54
I	INDUSTRIAL	310.7	152.61
IPRA	INDUSTRIAL PARK REDEVELOPMENT AREA	148.1	20.14
P	PUBLIC	1,926.9	96.80
R	RESIDENTIAL	2,008.4	484.21
VC	VILLAGE COMMERCIAL	53.2	44.55
VR	VILLAGE RESIDENTIAL	146.8	115.64

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 Oldmans 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 Analysis

Oldmans Township currently contains an existing SSA consisting of the industrial park and turnpike interchanges: and Camp Pedricktown. The area consists of the above-mentioned areas contributing to the Carneys Point Wastewater Treatment Plant. 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.

Zone	Developable Acres	Zoned Lot Areas	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>
AR	65.46	2 Acres	26	300	7,800
C	14.98	1 Acre	12	1,089	13,068
C/I	339.54	2 Acre	129	6,534	842,886
I	152.61	2 Acres	33	6,534	215,622
IPRA	20.14	2 Acres	0	4,356	0
P	96.80	N/A	0	0	0
R	484.21	1 Acre	424	300	127,200
VC	44.55	10,000 SF	147	300	44,100
VR	115.64	10,000 SF	372	300	111,600
Total FWSA Projected Sanitary Flows (GPD)					1,362,276
Total FWSA Projected Sanitary Flows (MGD)					1.36

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.

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.

This analysis used NJDEP’s nitrate-nitrogen target of 2 mg/L, with the assumption that all ammonium and other nitrogen compounds are converted to nitrate within the property, and that the nitrate concentrations dilute evenly across the HUC11. These assumptions are implicit in the nitrate dilution model developed by NJDEP. The County ran the analysis using annual average recharge (provided in the GSR-32 model).

Table 5-F-1 summarizes the number of residential units and commercial square footage that could potentially generate wastewater per zone within each HUC11, outside the sewer service area, within the municipality.

Table 5.F.1: HUC-11 BUILDOUT (Based on Existing Zoning)				
HUC11	Zoning	Total Acres	Residential (Units)	Commercial (SF)
02040202160	AR	1,649.48	824.74	0.00
	C	18.08	0.00	196,850.33
	CI	397.25	0.00	5,191,286.01
	I	13.52	0.00	176,630.23
	IPRA	21.40	0.00	465,991.03
	R	806.31	806.31	0.00
	VC	1.01	0.00	17,591.24
	VR	11.88	51.73	0.00
TOTALS		2,918.92	1,682.78	6,048,348.84
02040206020	AR	55.48	27.74	0.00
	CI	122.28	0.00	1,597,920.59
	I	53.80	0.00	703,015.58
	R	211.79	211.79	0.00
TOTALS		443.35	239.53	2,300,936.17
02040206030	AR	1,756.51	878.25	0.00
	R	0.03	0.03	0.00
	VC	16.03	0.00	279,359.97
	VR	11.88	51.75	0.00
TOTALS		1,784.46	930.03	279,359.97

The wastewater summary projections presented above for areas outside the SSA were prepared on behalf of the County of Salem by Fralinger Engineering in accordance with the Wastewater Estimation tool provided by the Department.

The Wastewater Estimation model builder was provided to assist with the preparation of a countywide Wastewater Management Plan consistent with the Water Quality Management Planning rule (N.J.A.C. 7:15). The application of this tool is specific to the estimation of new Wastewater Flows within Sewer Service Areas and to compare existing zoning to HUC 11 Nitrate Dilution Septic Densities. In addition, it compares new development potential, based on local zoning, to regional septic density standards for those areas outside of sewer service area. The nitrate dilution standards of the Water Quality Management Planning rule result in a "septic density" for each watershed in the State. This septic density identifies the maximum comparable residential zoning density that meets the groundwater quality goal.

The Wastewater Estimation model builder uses results from a separate nitrate dilution model designed by New Jersey Geological Survey to estimate septic densities. This separate model is titled: *A Recharge-Based HUC 11-Scale Nitrate-Carrying-Capacity Planning Tool for New Jersey, v1.0 (MS Excel Workbook)*. The method presented here combines a model of nitrate dilution (based on Trela and Douglas, 1978) with one of ground-water recharge on a HUC11 basis (based on Charles and others, 2003).

The goal of this HUC11-scale planning exercise to estimate the number of residential units and commercial square footage needed to provide enough recharge to dilute nitrate to a specified target. This method is intended to be a guide for estimating the impact of nitrate from septic tanks on HUC11-scale ground-water quality.” This analysis scale is at a regional watershed level. Other, more specific, methods may be required to further detail impacts to the zoning of each municipality.

To further develop this tool, The County provided additional customization to the application. The information depicted within this application was provided by the Department as a resource in the development of a GIS Model Builder Application tool for Counties/Municipalities. The information depicts regional overlays, which are not site specific.

The condition of any area appearing suitable for an intended use must be assessed by a comprehensive, due diligence investigation of several factors, including but not limited to a Natural Resource Inventory, physical on-site conditions, local, State and Federal requirements, approvals, status of any outstanding violation, the past uses and possible residual contamination of a site. NJDEP Land Use/ Land Cover and 2002 aerial photographs were utilized as the base layers.

The method/data generated by the Wastewater Estimation model builder has specific limitations within the application, as identified by the Department. As a result of these limitations, the current output of this GIS tool can only be qualified as an initial screen of current field conditions per County/ Municipality. Any other representation of generated results from this tool is not an accurate depiction of development potential and will be deemed to be a misrepresentation. Further customization of the application was performed at the municipal level, by the County, as identified above. However, more specific, methods may be required to further detail impacts to the zoning of each municipality.

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)	Remaining Treatment Capacity of System (mgd)
			Oldmans Township	Entire System		
Carneys Point WWTP	NJ0021601	1.3	0.021	1.069	1.36	-1.129

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 Oldmans 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.

B. ANALYSIS AND SELECTION OF TREATMENT ALTERNATIVES

The FWSA sanitary buildout analysis results above indicate that Oldmans 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.

Oldmans 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.

D. DISCHARGES TO GROUND WATER

The number of units allowed by zoning exceeds that which can be supported in a particular watershed. The Municipality is currently reviewing the results of the dilution analysis in an effort to determine what zoning adjustments may be appropriate to meet both the regulatory requirements and the development objectives of the municipality. The method/data generated by the Wastewater Estimation model builder has specific limitations within this application, as identified above. Consequently, this initial step does not provide sufficient data or an accurate depiction of development potential for the municipality. The Municipality will need to apply more specific methods of analysis prior to making adjustments to the current zoning.

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

The Wastewater Estimation model builder was utilized to compare existing zoning to the available nitrate dilution within each HUC11. The HUC11 analysis was performed for each municipality independently. The available land use within each HUC was proportioned based upon the total number of acres located within the municipal boundary.

Consequently, distributing the total number of allowable units among municipalities, within a given HUC11, was not necessary, as the land area used for the analysis had already been proportioned. When determining the number of potential units, based on zoning, permanently preserved open space was removed from the potential buildout. Conversely, the number of allowable units, based on available dilution capacity within each HUC, utilized permanently preserved open space areas.

Table 6.E.1 below summarizes the allowable number of residential units and commercial square footage that could be developed by Carneys Point outside the wastewater service area, while maintaining a target concentration of nitrate in groundwater.

Table 6.E.1: HUC-11 BUILDOUT CAPACITY / DENSITY				
HUC11	Zoning	Total Acres	Residential (Units)	Commercial (SF)
02040202160	AR	1,651.01	232.54	0.00
	C	18.08	2.55	10,183.80
	CI	397.25	55.95	223,803.81
	I	13.52	1.90	7,614.78
	IPRA	21.40	3.01	12,053.73
	R	806.31	113.56	0.00
	VC	1.01	0.14	568.79
	VR	11.88	1.67	0.00
TOTALS		2,920.44	411.33	254,224.91
02040206020	AR	55.48	4.78	0.00
	CI	122.28	10.54	42,164.61
	I	53.80	4.64	18,550.59
	R	211.79	18.26	0.00
TOTALS		443.35	38.22	60,715.20
02040206030	AR	1,756.51	243.96	0.00
	R	0.03	0.00	0.00
	VC	16.03	2.23	8,907.25
	VR	11.88	1.65	0.00
TOTALS		1,784.46	247.84	8,907.25

The following Table 6.E.2 summarizes the results of the nitrate dilution capacity analysis. The table reflects the differences between the potential number of residential units and commercial square footage that could be projected by the municipality outside the wastewater service area and number of allowable units necessary to maintain a target concentration of nitrate in groundwater.

Table-6-E-2: HUC11 Dilution Analysis Summary- Potential Development and Available Dilution

HUC11	Total Acres	Residential Buildout (Units)	Residential Capacity (Units)	Commercial Buildout (SF)	Commercial Capacity (SF)
02040202160					
TOTALS	2,920.44	1,682.78	411.33	6,048,348.84	254,224.91
02040206020					
TOTALS	443.35	239.53	38.22	2,300,936.17	60,715.20
02040206030					
TOTALS	1,784.46	930.03	247.84	279,359.97	8,907.25

The comparison of analyses shows that a build-out based on zoning would result in much more development than can actually be sustained to achieve adequate nitrate dilution. Therefore, the build-out based on the nitrate dilution analysis should be used in future planning. In addition, the current septic densities for the HUC-11's in Carneys Point Township are also expected to be much lower than required to achieve adequate nitrate dilution, when compared to the results of the nitrate dilution analysis.

The nitrate dilution analysis prepared for the Water Quality Management Plan results in the number of residential units and commercial square footage allowable for each for each watershed within the Municipality. *The method/data generated by the Wastewater Estimation model builder has specific limitations within the application*, as previously indicated above. As a result of these limitations, the current output of this GIS tool can only be qualified as an initial screen of current field conditions per County/ 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 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. The information provided was made available by NJAW or obtained from DEP online sources. The comparison of water allocation and projected build-out for the proposed sewer service area is summarized in the table below.

A. SUFFICIENCY OF WATER SUPPLY

The Township of Oldmans '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 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 utilizing 400gpd / dwelling unit. Commercial and Industrial flow 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)
	<i>See Note (a)</i>	<i>See Note (b)</i>	<i>See Note (c)</i>	<i>See Note (d)</i>
AR	65.46	26	400	10,400
C	14.98	12	1,361	16,332
C/I	339.54	129	8,168	1,053,672
I	152.61	33	8,168	269,544
IPRA	20.14	0	5,445	0
P	96.80	0	0	0
R	484.21	424	400	169,600
VC	44.55	147	400	58,800
VR	115.64	372	400	148,800
Total FWSA Projected Water Demand (GPD)				1,727,148
Total FWSA Projected Water Demand (MGD)				1.73
				(mgm) 53.54
				(mgy) 630.41

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.

2. Future Sewer Service Area: Water Build-out Analysis

All proposed potable water demand for the Township, included as part of this WMP submission, are identified within section 5.E.2.1 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 / Avg. Demand*		Total Projected Water Demand		Remaining Water Allocation	
			(MGM)	(MGY)	(MGM)	(MGY)	(MGM)	(MGY)
New Jersey American Water	% of System Demand	WAP070002/ 5328	70.4 / 37.95	753 / 455.41	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.

The total monthly water allocation for the water system that serves the municipality (70.4mgm/ 753mgY) is less than the water supply necessary to support existing demands and proposed development within the Oldmans Township 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 current water allocation is not sufficient to accommodate the Oldmans Township FWSA in its entirety. However, it should be noted that NJAW system has additional water production capabilities and could supply more than the current allocation. This may require NJAW to make adjustments to their water system and/or construct infrastructure improvements.

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 Salem 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 Oldmans Township WMP Sewer Service Area does not contain any areas located within the Pinelands. Areas located within the watershed of a Fresh Water One (FWI) 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 24" x 36" maps have been developed using New Jersey Department of Environmental Protection Geographic Information System digital data at a scale of 1" = 2,000'. 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 Oldmans 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: Oldmans Township Zoning Map

The map depicts the current zoning of Oldmans 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 Frontage	Minimum Lot Width	Minimum Lot Depth	Minimum Front Yard Setback	Minimum Side Yard Setback	Minimum Rear Yard Setback	Maximum Building Height	Maximum Building Cover
AR	AGRICULTURAL		2 ACRES	200'	200'	225'	75'	80'/30' MIN	75'		8%
R	RESIDENTIAL		1 ACRE	150'	150'	200'	50'	30'	50'		10%
VR	VILLAGE RESIDENTIAL		10,000 SF	100'	100'	100'	30'	15'	25'		40%
VC	VILLAGE COMMERCIAL		10,000 SF	100'	100'	100'	30'	15'	25'		40%
C	COMMERCIAL	INDIVIDUAL	1 ACRE	125'	125'	200'	50'	25'	40'		25%
		SHOPPING CENTER	8 ACRES	300'	300'	800'	75'	50'	100'		25%
I	INDUSTRIAL	INDIVIDUAL	3 ACRES	300'	300'	300'	125'	75'	75'		30%
		INDUSTRIAL PARK	2 ACRES	250'	250'	250'	100'	50'	50'		30%
C/I	COMMERCIAL/INDUSTRIAL	INDIVIDUAL	3 ACRES	300'	300'	300'	125'	75'	75'		75%
		INDUSTRIAL PARK	2 ACRES	250'	250'	250'	100'	50'	50'		75%
IPRA	INDUSTRIAL PARK REDEVELOPMENT	INDIVIDUAL	3 ACRES	100'	300'	300'	125'	75'	75'	50'	50%
		INDUSTRIAL PARK	2 ACRES	100'	250'	250'	100'	50'	50'		50%
P	PUBLIC										

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.