



# **Cape May County**

# **Wastewater Management Plan**

**March 2019**



# **Cape May County Wastewater Management Plan**

<b>Municipality</b>	<b>Status</b>	<b>Municipality</b>	<b>Status</b>
Borough of Avalon	Included	City of Sea Isle City	Included
City of Cape May	Included	Borough of Stone Harbor	Included
Borough of Cape May Point	Included	Township of Upper	Included
Township of Dennis	Included	Borough of West Cape May	Included
Township of Lower	Included	Borough of West Wildwood	Included
Township of Middle	Included	City of Wildwood	Included
City of North Wildwood	Included	Borough of Wildwood Crest	Included
City of Ocean City	Included	Borough of Woodbine	Included

***Amending the Following Areawide Water Quality Management Plans:***  
**Cape May County**

***Submitted by:***  
**The Board of Chosen Freeholders of the County of Cape May**

***Date of Current Submittal:***  
**March 11, 2019**

***Approved by the New Jersey Department of Environmental Protection:***  
**(to be inserted after NJDEP Approval)**

***Prepared By:***



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- CHAPTER 5. TOWNSHIP OF DENNIS
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## I. INTRODUCTION

The purpose of this document is to provide a comprehensive Wastewater Management Plan (“WMP”) for the County of Cape May, pursuant to the newest Water Quality Management Planning rules, adopted October 6, 2016 and published in the New Jersey Register on November 7, 2016. This WMP has been submitted to the New Jersey Department of Environmental Protection (“NJDEP”) for approval so that it may be incorporated into the Cape May County Water Quality Management Plan (“WQMP”) via the plan amendment procedure at N.J.A.C. 7:15-3.

### ***Alternative Assignment of Wastewater Management Planning Responsibility***

As of the date of submittal, wastewater management planning responsibility for the full County remains with the Cape May County Board of Chosen Freeholders and no alternative assignments have occurred pursuant to N.J.A.C. 7:15-2.8.

The Cape May County Board of Chosen Freeholders is the agency charged with WMP preparation, which has been delegated to the Cape May County Planning Department. The Cape May County Health Department is the designated 208 agency and is responsible for implementation of the WMP. The County of Cape May has retained Maser Consulting, PA to assist in preparation of the WMP.

This WMP Chapter has been prepared by Maser Consulting, PA and the Cape May County Planning Department as the overall WMP Chapter for the County of Cape May. Individual chapters are also provided for each municipality. Cooperation has been provided by the Cape May County Municipal Utilities Authority (CMCMUA), Lower Township Municipal Utilities Authority (LTMUA), and all 16 municipalities of Cape May County in the preparation of this plan.

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

This WMP incorporates or replaces all or part of any previously approved WMPs prepared by municipality or wastewater authorities for the County of Cape May. The WQMP rule provides that any WMP that was prepared and adopted in accordance with the WQMP rules in effect as of July 7, 2008, or P.L. 2011, c. 203 as amended and supplemented by P.L. 2013, c. 188, will continue in effect for the remainder of the term for which it was originally approved. Therefore, WMPs that were fully compliant with the 2008 rules maintain their expiration date as provided at the time of adoption. The previously approved Cape May County Water Quality Management Plan/Wastewater Management Plan (“CMCWMP” or “208 Plan”) was adopted on September 28, 2001 and was set to expire September 28, 2007. The NJ Permit Extension Act extended the expiration of the plan to June 30, 2017. The revised WQMP Rule (N.J.A.C. 7:15-1.3) provides that all areawide WQM plans, and revisions and amendments thereto, adopted prior to November 7, 2016, shall remain in full force and effect until such time as modified in accordance with the WQMP Rules. On January 3, 2019, NJDEP revised the WQMP Rules to further extend the expiration date for all WQM plans to June 30, 2019. The 2001 Cape May County WMP is still considered current through that date. However, adoption of this WMP would supersede the previously approved WMP.

The original Cape May County Water Quality Management (208) Plan was derived from Section 208 of the federal Water Pollution Control Act Amendments of 1972 and subsequent Clean Water Act of 1977. The Cape May County 208 Plan was approved by the United States Environmental Protection Agency (USEPA) on August 26, 1980. The current County Water Quality Management (208) Plan was prepared on





October 16, 1995, revised May 1, 1999 and approved by NJDEP on September 2000. Since that time there have been several individual amendments to the plan, including adoption of the Future Wastewater Service Area Map in 2013.

## Overview of County

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Cape May County is located at the southernmost tip of New Jersey in the Atlantic Coastal Plain. It has an area of 267 square miles and is bounded on the north by Atlantic and Cumberland Counties, on the east by the Atlantic Ocean, and on the west and south by the Delaware Bay (see **Map 1-1: Regional Location**).

With respect to the eastern population centers, Cape May County is approximately 150 miles south of New York City, 80 miles southeast of Philadelphia, and 130 miles due east of Washington, D.C. This ideal location makes the County a popular tourist attraction and is a prime factor in the success of the County's resort industry.

Cape May County has a current permanent population of about 97,000, based on the 2010 US Census. Seasonal fluctuations occur, with the summertime population reaching approximately 700,000, according to the South Jersey Transportation Planning Organization ("SJTPO"), with approximately two-thirds residing on the barrier islands<sup>1</sup>.

The overall physiography of Cape May County is a low lying, gently rolling plain. In the northwestern part of the County, the area is a nearly level sandy plain with a maximum elevation of 54 feet above mean sea level. The southernmost part of the County is a low sandy peninsula with elevations ranging from 0 to 27 feet above mean sea level. The Great Cedar Swamp and the Timber and Beaver Swamp are two large wetland areas located in the north-central part of the County.

The predominance of streams within the County are tidal in their lower reaches achieving their head in the fresh water swamps and discharging to saltwater marshes near the shore. Extensive tidal marshes border the lower reaches of the Tuckahoe River in the north and Dennis Creek in the west-central part of the County.

The entire eastern part of the County mainland consists of a broad tidal marsh area flanked by the five low-lying barrier islands to the east. These islands contain major resort areas that are the heart of the County's economy. The barrier islands extend 32 miles from Ocean City in the north to Cape May City in the south. They are approximately one mile wide at their widest point with the average width being  $\frac{1}{4}$  to  $\frac{1}{2}$  mile.

The construction of the Cape May Canal during the Second World War separated the municipalities of Cape May City, West Cape May Borough, Cape May Point Borough, and a portion of Lower Township at

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<sup>1</sup> SJTPO 2016 Update to the Regional Transportation Plan – Appendix C: Demographic Forecast, July 25, 2016

southern tip of the County from the remainder of the mainland. This canal is presently managed as a navigable waterway.<sup>2, 3</sup>

Approximately 23,000 acres in the northwest portion of the County are regulated under the jurisdiction of the Pinelands Comprehensive Management Plan. Nearly all of the remaining land within the County falls within the Coastal Management Zone under the jurisdiction of the Coastal Area Facility Review Act (“CAFRA”), which is administered through the NJDEP. The Pinelands National Reserve overlaps a portion of the Coastal Zone, west of the Garden State Parkway, within Upper Township, Dennis Township, Woodbine Borough and Middle Township. (See **Map 1-2: Regional Jurisdiction.**)

Cape May County is home to a diverse physical environment with three unique areas: the barrier islands; the wetlands (freshwater and estuarine); and the mainland, which is comprised of woodlands and developments. The County’s land use pattern is distinctively molded by the vast array of environmentally sensitive features. Large portions of these critical lands are owned by government entities.

The resort municipalities on the barrier islands are almost completely developed and they represent the major anchor of the County’s tourism resort industry. Redevelopment and revitalization of varying levels has been underway in the resort communities, typically including conversions from smaller seasonal cottages to larger homes or two-family dwellings. Conversion of hotel and seasonal rental units to second home condominiums has been occurring, which has resulted in a loss of over 5,000 hotel rooms in the Wildwoods. Additionally, higher density development has been planned, including five high-rise condominium hotels in Wildwood. Maintaining commercial uses has been an on-going problem being addressed by some of the resort towns to limit residential conversions and expansions in business zones.

The mainland has seen extensive growth in residential development since 1970 compared to the resort municipalities. As prices have increased on the barrier islands, there has been pressure to develop on the mainland. Much of this development has been small residential projects of 24 units or less to remain beneath the NJDEP CAFRA thresholds. Commercial development has also increased to serve the growing year-round population focused along the Route 9 corridor in Rio Grande, Cape May Court House and Marmora. While the County draws considerable funds from seasonal tourism, little revenue is generated via heavy industry, as environmental concerns have limited the establishment or growth of such industrial uses, although mining uses are prevalent on the mainland.

Campgrounds are an important use clustered on the mainland. Approximately 1/3 of the seasonal population growth in the mainland communities is directed into campgrounds. According to the County Comprehensive Plan, the County contains 46 Campgrounds with a total of 15,500 licensed campsites, which is greater than the combined total of campsites throughout the rest of New Jersey. The campgrounds are generally permitted to maintain higher densities than permanent uses. A number of golf courses have been developed and support the resort recreation needs. Newer projects of age restricted developments and golf course/residential developments reflect the expanding residential market on the mainland.

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<sup>2</sup> Cape May County Comprehensive Plan. February 15, 2005.

<sup>3</sup> Cape May County Water Quality Management Plan/ Waste Water Management Plan (208 Plan). September 27, 2007



The environmental resources and resulting sensitivities provide invaluable assets to the County. The wealth and diversity of ecological space within the County helps to preserve the overall resort character and economy of the region. It is estimated that only 11.5 percent of the total area in the County remains as developable uplands, the majority of which is active farmland.<sup>4</sup>

The existing land use patterns within Cape May County are illustrated on **Map 1-3: Existing Land Use** based on tax class parcel data.

### **Overview of Current Wastewater Services and Wastewater Responsibilities**

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For wastewater service purposes, Cape May County has been divided into five service area regions, consistent with the 201 facilities planning areas (see **Map 1-4: Wastewater Regions**). These regions and their respective regional wastewater treatment plants and municipalities are as follows:

#### **Ocean City - Upper Township Region**

CMCMUA Ocean City Region Wastewater Treatment Plant

- Upper Township
- Ocean City

#### **Dennis Township - Woodbine Region**

No Regional Wastewater Treatment Plant

Woodbine Airport Sewage Treatment Plant

- Dennis Township
- Woodbine Borough

#### **Seven Mile - Middle Township Region**

CMCMUA Seven Mile/Middle Township Region Wastewater Treatment Plant

- Avalon Borough
- Dennis Township (Garden State Parkway Rest Area)
- Middle Township (Crest Haven, Cape May Court House, Swanton)
- Sea Isle City
- Stone Harbor Borough

#### **Wildwood - Lower Township Region**

CMCMUA Wildwood/Lower Region Wastewater Treatment Plant

Lower Township Municipal Utilities Authority (LTMUA) Sewage Treatment Plant

- Lower Township (north of Cape May Canal)
- Middle Township (Del Haven, Green Creek, Rio Grande)
- North Wildwood City
- West Wildwood Borough

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<sup>4</sup> Cape May County Transfer of Development (TDR) Feasibility Study. July 2009.

- Wildwood City
- Wildwood Crest Borough

**Cape May Region**

CMCMUA Cape May Region Wastewater Treatment Plant

- Cape May City
- Cape May Point Borough
- Lower Township (south of Cape May Canal)
- West Cape May Borough

## II. SUMMARY OF ACTIONS

### ***Sewer Service Area Delineation Criteria***

This chapter describes the criteria used for the delineation of areas eligible for sewer service area and includes a description of the number of acres added and/or subtracted from the area eligible for sewer service.

### ***Eligible Sewer Service Areas***

The term “Eligible for sewer service area” means areas determined to meet the criteria for designation as sewer service in accordance with N.J.A.C. 7:15-4.4, and are identified as “Assigned sewer service area”, differentiating between area that currently conveys sewage to each existing facility and that which is proposed to convey sewage to each existing or proposed facility; or “Unassigned sewer service area”, which are areas mapped for future sewer service with no designated treatment facility.

Amendments to the WQMP Rules adopted on July 7, 2008 [40 N.J.R.4000(a)] necessitated a modification to certain sewer service areas based on environmental sensitivity. In accordance with the regulatory requirement, a total of approximately 2,000 acres were removed from the previously approved sewer service area. Additionally, nearly 10,000 acres that were not part of the previously approved sewer service area have been added based on local planning objectives and satisfaction of an environmental sensitivity assessment.

The following sewer service area expansions are proposed:

1. All Pinelands Towns and Villages in Dennis Township, Upper Township and Woodbine Borough are proposed as sewer service areas in accordance with the Memorandum of Understanding (“MOU”) between the New Jersey Pinelands Commission and NJDEP, dated April 9, 2012. As there are no existing or proposed public sewers in Upper and Dennis Townships in the Pinelands Management Area, these areas would be served by on-site or community wastewater treatment facilities with planning flows of greater than 2,000 gallons per day (“GPD”).
2. The Township of Dennis proposes future sewer service areas to be consistent with the designated Ocean View Town Center, Clermont Village Center, Dennisville Village Center, South Dennis Village Center and South Seaville Village Center within the Coastal Zone. As there are no existing

- or proposed public sewers in Dennis Township, these areas would be served by on-site or community wastewater treatment facilities with planning flows of greater than 2,000 GPD.
3. The Township of Lower is proposing to extend sewer service to existing development along Breakwater Road and the Route 9 corridor in Erma.
  4. The Township of Middle is proposing to expand its sewer service areas to be consistent with the designated Cape May Court House and Rio Grande-Whitesboro-Burleigh Town Centers and Swainton, Hildreth, Del Haven, and Green Creek Village Centers. Goshen Hamlet and the Mattera Farm in Rio Grande are excluded.
  5. The City of Sea Isle City is considering extending sewer service from the existing development in the North End (north of 22<sup>nd</sup> Street) to the Seven Mile Beach/Middle Township Regional WTP. Sea Isle City has submitted an application to NJDEP for site specific amendment for this area and is not included in this WMP update.
  6. The Township of Upper is proposing to extend sewer service from the Marmora Town Center District and the existing development along Roosevelt Boulevard to the Ocean City Regional WTP. Alternatively, the Marmora future sewer service area would discharge to groundwater if connection to Ocean City Regional WTP is not feasible.
  7. Upper Township is not proposing sewer service areas for the Seaville CAFRA Town Center, Petersburg CAFRA Village Center or Tuckahoe CAFRA Village. Instead, individual sites are proposed to be served with a future on-site treatment works discharging greater than 2,000 GPD. These sites are detailed further in the Upper Township WMP Chapter.
  8. Woodbine Borough is pursuing funding from the USDA to connect the Route 550 corridor, including the Woodbine Developmental Center (“WDC”) and the downtown area of Woodbine, to the CMCMUA Seven Mile Beach Sewer Treatment Plant. The CMCMUA held a public hearing on December 5, 2018 accepting Woodbine into the regional sewer service area.
  9. Other municipalities are proposing minor adjustments to their existing sewer service areas.

Areas previously designated as “General Service Area for Wastewater Facilities with Planning Flows of Less Than 2,000 GPD which Discharge to Ground Water”, or similar language, are now designated as either “Septic Area (ISSDS 2,000 GPD or Less)” or “Restricted Septic Area (Planning Flows of 2,000 GPD or Less AND Less Than 6 Residential Units)” Previously, this “General Service Area for Wastewater Facilities with Planning Flows of Less Than 2,000 GPD which Discharge to Ground Water”, discharge designation provided that any number of wastewater discharges to ground water could occur as long as each discharge was less than 2,000 GPD. Areas now designated “Septic Area (ISSDS 2,000 GPD or Less)” have demonstrated that the zoning meets the nitrate planning standard of 2 mg/L on a HUC 11 basis. Under the new “Restricted Septic Area (Planning Flows of 2,000 GPD or Less AND Less Than 6 Residential Units)” designation, residential development or subdivisions with a total of less than six dwelling units are allowed, but residential developments of six or more units must undergo a nitrate dilution analysis to ensure that the individual or other subsurface sewage disposal systems can meet the 2 mg/L nitrate planning standard on-site.

The amendments to the WQMP Rules also necessitated the removal of areas identified as General Service Area for Wastewater Facilities with Planning Flows of Less Than 20,000 GPD which Discharge to Ground

Water. These areas were evaluated as part of the WMP Future Wastewater Service Area Map adoption in 2013.

On January 13, 2012, the New Jersey Legislature enacted the '180 Day Rule' (P.L.2011, Chapter 203), which required that Future Sewer Service Area Maps be submitted to NJDEP within 180 days of adoption of the act (July 15, 2012). A public meeting was held by the Cape May County Board of Chosen Freeholders on June 26, 2012 to approve the submission of the Draft Future Sewer Service Area Maps to NJDEP (see Resolution in Appendix). Draft Future Sewer Service Area Maps for all 16 municipalities were submitted to NJDEP on July 12, 2012. On November 6, 2013, the NJDEP adopted an amendment to the Cape May County WQMP, which included the Future Wastewater Management Areas Maps for all 16 municipalities designating the sewer service areas. The adopted wastewater management areas for Cape May County are reflected on **Map 1-5**.

### ***Sewer Service Areas in Environmentally Sensitive Areas***

Under the WQMP rules, large contiguous environmentally sensitive areas, or "ESAs", defined as 25 acres or larger consisting of habitat for threatened and endangered species as identified on the Landscape Project Maps of Habitat for Endangered, Threatened or Other Priority Species, Natural Heritage Priority Sites, Category One special water resource protection areas, and wetlands, alone or in combination, should be excluded from areas eligible for sewer service. Additionally, Coastal Fringe Planning Areas, Coastal Rural Planning Areas, or Coastal Environmentally Sensitive Planning Areas identified on the CAFRA Planning Map, shall not be identified as eligible for sewer service area. However, the WQMP rule provides, at N.J.A.C. 7:15 – 4.4(i)-(l) and 4.4 (f), several exceptions which allow ESAs and CAFRA areas to be included in areas eligible for sewer service.

In accordance with N.J.A.C 7:15-1.5, "environmentally sensitive areas" means those areas identified in an areawide WQM plan as land areas possessing characteristics or features that are important to the maintenance or improvement of water quality, or to the conservation of the natural resources of the State. Environmentally sensitive areas include, but are not limited to, areas mapped as endangered or threatened wildlife species habitat on the Department's most currently available Landscape Maps of Habitat for Endangered, Threatened or Other Priority Species, Natural Heritage Priority Sites, wetlands and riparian zones.

For the purposes of this report, the following environmental constraints, as shown on **Map 1-6: Hydrologic Features**, were assumed to constrain future development within the adopted wastewater service areas:

- Open Water Bodies as delineated by the NJDEP National Hydrography Dataset (NHD) Waterbody GIS data, last updated by NJDEP on November 1, 2010.
- Freshwater Wetlands were extracted from the 2012 NJDEP Land Use/Land Cover data. Transitional area buffers were added to the constrained area. Wetlands areas associated with a primary water body (river, bay, ocean, etc.) and/or containing habitat for threatened and endangered species (Rank 3, 4 and 5 as per the NJDEP Landscape Project Version 3.3) were assumed to have exceptional resource value and 150-foot transition area buffers were applied. Isolated patches of wetlands not containing threatened and endangered species habitat were assumed to have intermediate resource value and 50-foot buffers were applied.

- Category-One ("C1") Waters and their Tributaries as delineated by the NJDEP Surface Water Quality Standards data were given a 300-foot Special Water Resource Protection Area (SWRPA) buffer included in the constrained area.
- Riparian Buffers were added to non-C1 streams in accordance with the NJDEP Flood Hazard Control Act. Streams adjacent to threatened and endangered species habitat are given a 150-foot wide riparian buffer. All other streams are given a 50-foot riparian buffer.

**Map 1-7: Natural Features** depicts the following layers, which were considered in the adoption of the wastewater service areas:

- Habitat for Endangered, Threatened or Other Priority Species. Rank 3, 4 & 5 habitat patches for state and federally listed threatened and endangered species are shown, as published in Version 3.3 of the NJDEP Landscape Project mapping.
- Natural Heritage Priority Sites as published by the NJDEP March 1, 2007.

### **USEPA Section 201 Grant Conditions**

The CMCMA Wastewater Treatment Facility is subject to USEPA 201 Grant Restrictions which prohibit the connection of sewer to parcels of land within environmentally sensitive areas. Such environmentally sensitive areas include tidal and freshwater wetlands, intermittent stream corridors, critical uplands and wildlife habitat, beach and dune areas, and flood-prone areas. Environmentally sensitive areas cannot be sewered unless a mapping revision or waiver is received from the USEPA prior to sewer connection of such parcels.

As set forth in item 3b of each of the USEPA Grant Conditions for Cape May County (Cape May Region, Seven Mile Beach/Middle Township Region and Wildwood / Lower Township Region) (May 6, 1980) "no sewer hookup or other connections to the sewage treatment facilities included in the scope of this grant will be allowed or permitted so as to allow the discharge of wastewater from any building, facility or other construction on any parcel of land within any wetland or within 100 year floodplains, which land parcel as of the date of the FNSI/EA was undeveloped, unless approved in writing by the Regional Director." The process for approval is delineated by the USEPA on its regional website, <http://www.epa.gov/region2/water/sewer.html>.

Requests for development/sewer connection on parcels that encroach on floodplains are dependent upon whether or not the community in which the project is located participated in the regular phase of FEMA's National Flood Insurance Program and the location of the project within the floodplain. Since the municipalities are FEMA participants, USEPA typically grants waivers for development/sewer connection in floodplains. However, the USEPA does not typically grant a general mapping waiver for wetlands. At the time development is proposed, the USEPA requires the submission of information for a waiver request on the specific project.

The USEPA's review criteria for wetlands mapping waivers, as detailed on the USEPA's website, are more stringent. As such, the Adopted Sewer Service Area ("SSA") Maps accurately reflect the regulatory, statutory and contractual requirements that must be met in order for development/sewer connection of properties located in environmentally sensitive areas to occur. Wherever possible, the SSA excluded wetlands that have been verified by an LOI. In other areas, the either the wetlands were removed based on

NJDEP data or the NJDEP wetlands data is shown as “Potentially Environmentally Sensitive Area Subject to EPA Grant Restrictions” within the sewer service areas on **Map 1-5: Adopted Sewer Service Areas**.

## Planning Coordination

### Plan Endorsement

The New Jersey State Development and Redevelopment Plan (“SDRP”) provides a guide for development in the County. The SDRP provides Planning Areas, which recommend policy goals that reflect different intensities of development. For Cape May County, most of the resort communities are within the PA5B Environmentally Sensitive Barrier Island Planning Area. Most of the mainland outside of the developed areas along the Garden State Parkway/Route 9 is within PA5 Environmentally Sensitive Planning Area or Parks and Natural Areas. This reflects the environmental constraints (freshwater and tidal wetlands, large areas of public lands, and forested lands) within the County. Within the interior of the mainland, along the Route 47 corridor and intersecting roads, is PA4 Rural Planning Area, which reflects the large lot development occurring in these areas. Along the Route 9 corridor is PA3 Fringe Planning Area, with the exception of Upper Township, which is in the PA2 Suburban Planning Area.

**Table 1-1: Municipal Plan Endorsement & CAFRA Center Status** shows the status of each municipality with the New Jersey State Planning Commission (NJSPC), as of February 2019. Seven municipalities (Dennis Township, Cape May City, Middle Township, Ocean City, Cape May Point Borough, West Cape May Borough, and Upper Township) have received Plan Endorsement and two municipalities (Lower Township and Sea Isle City) are in the process of obtaining Plan Endorsement. Plan Endorsement is valid for 10 years. Avalon Borough submitted for Pre-Petition but has not formally entered into the Plan Endorsement process.

As defined by the SDRP, a Center is “a compact form of development with one or more cores and residential neighborhoods”. The SDRP categorizes Centers in New Jersey as Urban, Regional, Town, Village or Hamlet. Centers are formally designated by the NJSPC. The Center Designation Process was enacted by the NJSPC in 1993 and was subsequently replaced by the Plan Endorsement Process in 2004, which seeks to integrate planning for the Center with considerations for the surrounding environs.

There were seven designated SDRP Centers under the Center Designation process with the NJSPC in the County: Cape May Point Borough, Cape May City, Wildwood Crest Borough, Wildwood City, North Wildwood City, and West Wildwood Borough (Wildwood Regional Center), and Stone Harbor Borough.

In April 2008, the NJSPC implemented regulations to facilitate the Plan Endorsement process with towns that had previously received Centers designation. In accordance with the Coastal Zone Management Rules (N.J.A.C.7:27E-5B.6), within the CAFRA Coastal Zone, Centers designated by the NJSPC are to be reviewed and confirmed by the NJDEP. With NJDEP confirmation, these Centers are designated as CAFRA Centers to be used for NJDEP CAFRA permitting. At this time, Cape May City, Cape May Point Borough, Middle Township, Ocean City, Upper Township, and West Cape May Borough have been approved for State Plan Endorsement.

The Coastal Zone Management Rules also delineate a number of other Coastal and CAFRA Centers in Cape May County. Coastal Centers were delineated by the NJDEP for the purpose of applying impervious cover and vegetative cover requirements until the Coastal Center expires or is superseded by the CAFRA Center. Coastal Centers are further categorized as either Mainland or Non-Mainland Coastal Centers. Mainland Coastal Centers delineated by the NJDEP expired as of February 7, 2005. Non-Mainland and





CAFRA Centers are deemed valid until the NJSPC formally adopts revised boundaries, at which time the NJDEP will review and either accept or reject the changes.

Although many of the Centers in Cape May County have expired, the State Legislature passed the Permit Extension Act (P.L. 2008, c.78), which extended the expiration for many of these Center designations. This included the Mainland Coastal Centers that expired in 2005 but excludes Centers in environmentally constrained areas and Coastal Centers that, as of March 15, 2007, had not submitted an application for plan endorsement to the NJSPC and was not in compliance with the provisions of the Coastal Zone Management Rules. The most recent Permit Extension Act Amendment extended these centers to at least June 30, 2020. Without going through State Plan Endorsement, these Centers will not continue.

**Table 1-1** lists the Centers in Cape May County and their status with the NJSPC and NJDEP. This WMP and the proposed sewer service area herein are consistent with the endorsed plans and are deemed necessary to accomplish the center-based development and environs protection objectives. The County and municipalities have coordinated with the New Jersey Office of Planning Advocacy (“NJOPA”) regarding the future sewer service area boundaries.

<b>Table 1-1: Municipal Plan Endorsement &amp; CAFRA Center Status</b>					
<b>Center (Municipality)</b>	<b>Status</b>	<b>Center Designation</b>	<b>Plan Endorsement</b>	<b>CAFRA Center</b>	<b>Center Expiration</b>
<b>Avalon Town Center</b>	CAFRA Center	10/27/99		5/15/00	6/30/20
<b>Cape May City Town Center</b>	CAFRA Center	10/27/99	10/17/12	5/15/00	10/17/22
<b>Cape May Point Town Center</b>	CAFRA Center	4/23/97	7/15/09	4/19/10	7/15/19
<b><u>Dennis Township</u></b>					
Clermont Town Center	Designated Center	5/15/13	5/15/13		5/15/23
Dennisville Village	Designated Center	5/15/13	5/15/13		5/15/23
Ocean View Town Center	Designated Center	5/15/13	5/15/13		5/15/23
South Dennis Village	Designated Center	5/15/13	5/15/13		5/15/23
South Seaville Village	Designated Center	5/15/13	5/15/13		5/15/23
<b><u>Lower Township</u></b>					
Diamond Beach	Non-Mainland Coastal Center		Pending		6/30/20
Schellenger's Landing	Expired Mainland Coastal Center		Pending		2/7/05
Town Bank-North Cape May Town Center	Mainland Coastal Center		Pending		6/30/20
Villas Town Center	Expired Mainland Coastal Center		Pending		2/7/05
<b><u>Middle Township</u></b>					
Cape May Court House Town Center	CAFRA Center		9/28/11	5/7/12	9/28/21
Del Haven Village	CAFRA Center		9/28/11	5/7/12	9/28/21
Hildreth Village	CAFRA Center		9/28/11	5/7/12	9/28/21
Goshen Village	CAFRA Center		9/28/11	5/7/12	9/28/21
Green Creek Village	CAFRA Center		9/28/11	5/7/12	9/28/21
Rio Grande-Whitesboro-Burleigh Town Center	CAFRA Center		9/28/11	5/7/12	9/28/21
Swainton Village	CAFRA Center		9/28/11	5/7/12	9/28/21
<b>Ocean City Regional Center</b>	CAFRA Center		11/24/09	4/19/10	11/24/19
<b>Sea Isle City Town Center</b>	Non-Mainland Coastal Center		Pending		6/30/20
<b>Stone Harbor Town Center</b>	CAFRA Center	10/27/99		5/15/00	6/30/20
<b><u>Upper Township</u></b>					
Tuckahoe Village	CAFRA Center		2/24/07	5/3/08	6/30/20
Marmora-Palermo-Beasley's Point Town Center	CAFRA Center		2/24/07	5/3/08	6/30/20
Petersburg Village	CAFRA Center		2/24/07	5/3/08	6/30/20
Seaville Town Center	CAFRA Center		2/24/07	5/3/08	6/30/20
<b>West Cape May Town Center</b>	CAFRA Center		4/16/08		4/16/21
<b><u>Wildwood / West Wildwood / North Wildwood / Wildwood Crest</u></b>					
Wildwoods Regional Center	CAFRA Center	4/22/98			6/30/20

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**Coastal Zone Management**

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New Jersey's Coastal Zone has been established pursuant to the federal Coastal Zone Management Act of 1972 and was federally approved in 1978. The Rules on Coastal Zone Management (N.J.A.C. 7:7E) establish the substantive rules of the NJDEP regarding the use and development of coastal resources. These rules provide the basic policy direction for planning actions undertaken by the NJDEP in the Coastal Zone as per Section 306 of the federal Coastal Zone Management Act. Planning decisions affecting New Jersey's Coastal Zone under the New Jersey Water Quality Planning Act and Section 208 of the federal Clean Water Act must be consistent with New Jersey's Coastal Zone Management program.

The Rules on Coastal Zone Management include identification of 48 Special Areas requiring special management consideration. In addition to the environmental features previously identified, the Rules on Coastal Zone Management generally prohibit development on beaches, dunes and in coastal high hazard areas. These areas have also been excluded from sewer service under this WMP because providing centralized sewer service would encourage a development pattern inconsistent with the environmental sensitivity, recreational importance, and risk to life and property in these areas.

The Rules on Coastal Zone Management further define planning areas within the coastal zone designed to shape future development patterns along the coast. Among the five coastal planning areas, the Coastal Fringe, Coastal Rural, and Coastal Environmentally Sensitive Planning Areas are identified as areas to encourage growth in compact centers and to maintain low density and low intensity development outside of those centers. The extension of centralized sewer service in these planning areas, outside of the proposed CAFRA Centers is inconsistent with the growth and protection objectives of New Jersey's Coastal Zone Management program and therefore, these coastal planning areas have been excluded from sewer service areas.

Proposed developments tying into existing and proposed sewer service areas which require coastal permits must demonstrate compliance with all applicable sections of the Coastal Zone Management rules including, but not limited to, Wetlands (N.J.A.C. 7:7E-3.27), Wetlands Buffers (N.J.A.C. 7:7E-3.38), Endangered or Threatened Wildlife or Vegetation Species Habitat (N.J.A.C. 7:7E-3.38), Secondary Impacts (N.J.A.C. 7:7E-6.3), Public Facility Use Policies (N.J.A.C. 7:7E-7.6), Water Quality (N.J.A.C. 7:7E-8.4), Ground Water Use (N.J.A.C. 7:7E-8.6) and the policies under General Land Areas rules, Subchapters 5, 5A and 5B.

**Coordination with the Coastal Zone Management Program**

Several Cape May County municipalities have received approval from NJDEP to change CAFRA Planning Area boundaries and Center Community Development Boundaries. CAFRA Planning Areas and designated Centers were considered during the mapping of future sewer service areas. NJDEP was consulted during this mapping process. CAFRA Center status is shown on **Table 1-1**.

***Pinelands Comprehensive Management Plan***

In 1978, the Pinelands National Reserve was created by the National Parks and Recreation Act of 1979, (16 U.S.C. § 471i.), which includes approximately 1.1 million acres in the southern half of New Jersey. The Act required the establishment of a planning entity to plan for protection of the area. In response, the Pinelands Protection Act (N.J.S.A. 13:18A-1) was adopted by the New Jersey Legislature in 1979, which created the 927,000-acre Pinelands Management Area with the New Jersey Pinelands Commission as the legislative body. Those statutes are implemented through the Pinelands Comprehensive Management Plan (“CMP”) (N.J.A.C. 7:50).

The Water Quality Management Plan rules require coordination with the Pinelands Commission to ensure that amendments, including wastewater management plans, are consistent with the intent and programs of the Pinelands Protection Act. The Pinelands Commission has also entered into a Memorandum of Agreement with the State Planning Commission that certification of a municipality’s land use plan as consistent with the Pinelands CMP by the Pinelands Commission shall be considered as endorsed plans under the State Plan.

About 34,800 acres of Cape May County are within the Pinelands Management Area, covering lands within Dennis Township, Upper Township and Woodbine Borough. This includes 6,305 acres within defined Pinelands Centers. The remaining lands are primarily within forest areas with just over 2,000 acres in the rural development area south of Woodbine Town and adjacent to Tuckahoe and Petersburg Villages. (See **Table 1-2: Pinelands Management Areas.**)

<b>Table 1-2: Pinelands Management Areas</b>	
<b>Name</b>	<b>Acres</b>
<b>Pinelands Centers</b>	<b>6,305</b>
Belleplain Village (Dennis Township)	719
Dennisville Village (Dennis Township)	379
Eldora Village (Dennis Township)	278
North Dennis Village (Dennis Township)	189
Petersburg Village (Upper Township)	330
Tuckahoe Village (Upper Township)	197
Woodbine Town (Woodbine Borough)	4,213
<b>Pinelands Management Areas</b>	<b>28,424</b>
Forest Area	26,216
Rural Development Area	2,208
<b>Total Pinelands</b>	<b>34,729</b>
<i>SOURCE: Pinelands Management Areas, November 2011</i>	

For facilities (including but not limited to sewer connections, sewer extensions and on-site treatment plants) which are located in the Pinelands Management Area, as defined at N.J.S.A. 13:18A-11, the approval of the Pinelands Commission pursuant to the requirements of the Pinelands CMP is required prior to construction. All facilities and activities included within this WMP should be consistent with the requirements of the CMP.

The Pinelands Management Area represents a partnership between the State and Federal Government to preserve, protect and enhance the natural and cultural resources of Pinelands. The Pinelands Comprehensive Management Plan protects the region in a manner that maintains its unique ecology while



permitting compatible development. The communities within the Pinelands are designated as either Pinelands Villages or Towns, which allow traditional development under certain rules. The Pinelands Protection Act established a requirement that county and municipal master plans and land use ordinances be brought into conformance with the Pinelands Comprehensive Management Plan. The ordinances of Dennis Township, Upper Township and Woodbine Borough are in conformance with the Pinelands CMP.

The regulated Pinelands Management Area is within the Pinelands National Reserve, which extends beyond the limits of the Pinelands Management Area. In Cape May County, the Pinelands National Reserve overlaps the Coastal Zone, west of the Garden State Parkway, within Upper Township, Dennis Township, Woodbine Borough and a portion of Middle Township. Under a Memorandum of Agreement between the NJ Pinelands Commission and the NJDEP Land Use Regulation Program, the NJDEP is the lead agency in review of development applications in the Pinelands National Reserve Area. The NJ Pinelands Commission is a reviewing agency and may provide comments on development in this area.

For facilities (including but not limited to sewer connections, sewer extensions and on-site treatment plants) which are located in the Pinelands Area, as defined at N.J.S.A. 13:18A-11, the approval of the Pinelands Commission pursuant to the requirements of the Pinelands Comprehensive Management Plan (CMP) is required prior to construction. All facilities and activities included within this WMP should be consistent with the requirements of the CMP.

In accordance with the MOU between the New Jersey Pinelands Commission and NJDEP, dated April 9, 2012, all lands located within a Regional Growth Area, Pinelands Village or Pinelands Town shall be deemed to be within a sewer service area. Additionally, the NJDEP will not require that environmentally sensitive areas, as defined at N.J.A.C. 7:15-5.24, be removed from such sewer service areas.

### **Coordination with Municipalities and Sewer Authorities**

**Table 1-3** lists the municipalities and wastewater utilities that have been consulted during the preparation of the CMCWMP. The County consulted with them through mailings and E-mails, as well as a WMP Project Initiation Meeting on September 9, 2011. The County also held a series of municipal implementation meetings with each municipality in May 2012, including members of NJDEP, CMCMUA and LTMUA to discuss Sewer Service Area mapping requirements pursuant to P.L.2011, c.203.

<b>Table 1-3: Coordination with Municipalities and Sewer Authorities</b>		
<b>Municipality</b>		<b>Wastewater Utilities</b>
<ul style="list-style-type: none"> <li>• Avalon Borough</li> <li>• Cape May City</li> <li>• Cape May Point Borough</li> <li>• Dennis Township</li> <li>• Lower Township</li> <li>• Middle Township</li> <li>• North Wildwood City</li> <li>• Ocean City</li> </ul>	<ul style="list-style-type: none"> <li>• Sea Isle City</li> <li>• Stone Harbor Borough</li> <li>• Upper Township</li> <li>• West Cape May Borough</li> <li>• West Wildwood Borough</li> <li>• Wildwood City</li> <li>• Wildwood Crest Borough</li> <li>• Woodbine Borough</li> </ul>	<ul style="list-style-type: none"> <li>• Cape May County Municipal Utilities Authority</li> <li>• Lower Township Municipal Utilities Authority</li> </ul>

### III. EXISTING AND FUTURE WASTEWATER TREATMENT FACILITIES

This section addresses wastewater treatment facilities currently or anticipated to be utilized by development within the County, whether the treatment works itself is located within or outside of the County. Facility tables are provided for each existing and proposed wastewater treatment facility at the end of this chapter.

#### *Existing Areas Served by Wastewater Facilities*

**Map 1-5** shows the areas actively served by existing wastewater facilities, and the tables in Section V 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.

Sewer service areas may include industrial businesses that discharge process and/or sanitary wastewater to the collection system for treatment by a facility not owned by that business.

#### *Existing Public Wastewater Treatment Works*

**Table 1-4** lists the major domestic wastewater treatment facilities and the municipalities they serve. The wastewater districts, franchise areas, and the associated treatment works are depicted on **Map 1-5**.

<b>Table 1-4: Existing Wastewater Districts and Municipalities Currently Served</b>	
<b>Wastewater Utility</b>	<b>Municipalities Served</b>
CMCMUA Cape May Region	Cape May City Cape May Point Borough Lower Township West Cape May Borough
CMCMUA Ocean City Region	Ocean City
CMCMUA Seven Mile Beach/ Middle Township Region	Avalon Borough Middle Township Middle Township (Crest Haven) Sea Isle City Stone Harbor Borough Dennis Township (Garden State Parkway Rest Area)
CMCMUA Wildwood/Lower Township Region	Lower Township (Shawcrest) Middle Township (Rio Grande) North Wildwood City West Wildwood Borough Wildwood City Wildwood Crest Borough
Lower Township Municipal Utilities Authority	Lower Township Middle Township (Green Creek & Del Haven)
Woodbine Airport Sewage Treatment Plant	Woodbine Borough



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

**Map 1-5** shows the major interceptors, trunk lines and pumping stations within the various sewer service areas for public wastewater treatment facilities. There are no known pipes or pump stations that restrict flow or constrain the ability of any portion of the sewer service area to accept increased flows.

***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. Facility tables for all existing on-site, non-industrial treatment facilities that discharge to surface water or that discharge more than 2,000 gallons per day to ground water of domestic wastewater and are regulated under a NJPDES permit can be found in each Municipal Chapter of the WMP.

***Existing Industrial Treatment Works for Process Wastes and Sanitary Sewage***

Some industrial land uses have independent wastewater treatment facilities that treat and discharge manufacturing process waste and/or sanitary sewage. They may be discharged to ground water or to surface water. Facility tables for all existing industrial treatment works that discharge to surface water or that discharge more than 2,000 gallons per day to ground water of process or sanitary wastewater and are regulated under a NJPDES permit can be found in each Municipal Chapter of the WMP.

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

Remaining areas of the County, not otherwise designated as service areas for treatment facilities requiring a NJPDES permit, are included within one of two wastewater management area designations for septic systems and other small treatment works that treat 2,000 gallons per day or less of wastewater and discharge to ground water. Areas designated “Septic Area (ISSDS 2,000 GPD or Less)” have demonstrated that the zoning meets the nitrate planning standard of 2 mg/L on a HUC 11 basis. Areas designated “Restricted Septic Area (Planning Flows of 2,000 GPD or Less AND Less Than 6 Residential Units)” have not made this demonstration and thus, residential development or subdivisions with a total of less than six dwelling units are allowed, but residential developments of six or more units must undergo a nitrate dilution analysis to ensure that the individual or other subsurface sewage disposal systems can meet the 2 mg/L nitrate planning standard on-site.



## IV. WASTEWATER TREATMENT CAPACITY ANALYSIS – SEWER SERVICE AREA

The existing and future wastewater management needs of each sewer service area of a Domestic Treatment Works (“DTW”), or industrial wastewater facility that receives wastewater from outside the facility boundaries shall be identified and evaluated in a wastewater treatment capacity analysis. This chapter describes the build out methodology used to calculate existing wastewater flows for assigned sewer service areas (SSAs with a permitted treatment facility), as well as project future wastewater treatment demand for assigned and unassigned sewer service areas within the County.

### *Calculating Existing Wastewater Flows*

#### *Existing Development*

In accordance with N.J.A.C. 7:15-4.5(b)(1)(i), the County has identified the existing wastewater flow using the highest consecutive 3-month rolling average over the most recent ten-year period. The peak 3-month average flow is used instead of the 12-month average because this alternate method better predicts peak flows in the summer months due to the seasonal population shift of the tourist economy in Cape May County.

Wastewater flow was also projected for existing development within the assigned and unassigned sewer service areas, which are not yet connected to the treatment facility, but which are currently discharging to septic system. Methodology to determine these wastewater flow totals is described below.

### *Projecting Future Wastewater Flows*

#### *Wastewater Demand Projections in Urbanized Municipalities’ Sewer Service Areas*

The WQMP rules (N.J.A.C. 7:15-1.15) define urbanized municipalities as municipalities where 90 percent of the municipality’s land area appears as Urban Lands on the most recent Land Use/Land Cover GIS database. Urbanized municipalities also include those municipalities identified as “Urban Aid” pursuant to the New Jersey Redevelopment Act, N.J.S.A. § 55:19-20 et seq.; as an “Urban Enterprise Zone” pursuant to the New Jersey Urban Enterprise Zones Act, N.J.S.A. 52:27H-60 et seq.; as a “Garden State Growth Zone” municipality pursuant to the New Jersey Economic Opportunity Act of 2013, N.J.S.A. 52:27D-489p et seq.; and as Transit Villages approved by the New Jersey Department of Transportation and NJ Transit.

In urbanized municipalities it is assumed that redevelopment of previously developed portions of the municipality will make up the majority of the future wastewater management needs. Therefore, an analysis limited to development potential based solely on the zoning of the undeveloped and developable land area of the municipality in these municipalities may underestimate their future wastewater management needs. In these urbanized municipalities, a 20-year wastewater projection is based on population and employment projections.

As shown in **Table 1-5**, none of the Cape May County municipalities contain greater than 90 percent Urban Lands. There are no Urban Aid Municipalities, Garden State Growth Zones or Transit Villages. North Wildwood City, West Wildwood Borough, Wildwood City and Wildwood Crest Borough are the only municipalities with Urban Enterprise Zones and are the only four municipalities that meet the definition of Urbanized Municipality.





<b>Table 1-5: Urbanized Municipalities</b>						
<b>Municipality</b>	<b>Urban Land Coverage</b>	<b>Urban Aid Municipality</b>	<b>Urban Enterprise Zone</b>	<b>Garden State Growth Zone</b>	<b>Transit Village</b>	<b>Urbanized Municipality</b>
Avalon Borough	29.1%					No
Cape May City	37.3%					No
Cape May Point Borough	54.5%					No
Dennis Township	8.4%					No
Lower Township	22.4%					No
Middle Township	10.9%					No
North Wildwood City	48.8%		Yes			Yes
Ocean City	24.1%					No
Sea Isle City	31.1%					No
Stone Harbor Borough	31.8%					No
Upper Township	9.5%					No
West Cape May Borough	32.7%					No
West Wildwood Borough	44.7%		Yes			Yes
Wildwood Crest Borough	66.1%		Yes			Yes
Wildwood City	64.0%		Yes			Yes
Woodbine Borough	18.5%					No

For the urbanized municipalities, the future wastewater demand is projected based on future estimates of permanent and seasonal residential population, permanent population living in group quarters (i.e. college residence halls, residential treatment centers, nursing facilities, group homes, correctional facilities, etc.), seasonal population in marinas, seasonal population in motels, and number of permanent and seasonal employees. The methodology and assumptions for these analyses are described in the individual Municipal WMP Chapters.

Despite meeting the definition for urbanized municipality, Wildwood City opted to perform alternative buildout analyses to project future wastewater demand. The methodology and assumptions for these analyses are described in the Wildwood City WMP Chapter.

### **Non-Urbanized Municipalities**

For municipalities not meeting the definition for urbanized municipalities, future wastewater demand is projected based on a buildout analysis of the amount of remaining developable lands within the future sewer service area, if these lands were fully developed to their maximum potential. Utilizing GIS (geographic information system) technology, the amount of developable land is assessed based on lot area and contiguous unconstrained land compared to the minimum requirements of each individual zone district. The results of this analysis determine whether the zoning will result in a future wastewater demand that exceeds capacity. The methodology and assumptions for these analyses are described in the individual Municipal WMP Chapters.



**Wastewater Capacity Analysis of Future Sewer Service Area**

In accordance with N.J.A.C. 7:15-4.5(b)(2), the buildout potential for the service area must be compared against the total wastewater capacity of the treatment plant. **Table 1-6: Wastewater Capacity Analysis of Sewer Service Areas** provides the total projected future wastewater demand for each regional wastewater service area within Cape May County in millions of gallons per day (“MGD”). Based on the analysis, each regional wastewater treatment facility will have sufficient capacity at full buildout, with exception to the Seven Mile Beach/Middle Township Region WTP. Strategies to address the anticipated capacity deficiency for the Seven Mile Beach/Middle Township Region WTP are addressed in Section VII.

<b>Table 1-6: Wastewater Capacity Analysis of Sewer Service Areas</b>				
<b>Future Sewer Service Area/Pump Station</b>	<b>Existing (MGD)</b>	<b>Future (MGD)</b>	<b>Permitted Capacity (MGD)</b>	<b>Surplus(+) /Deficit(-) (MGD)</b>
Cape May City	1.655	1.754		
Cape May Point	0.127	0.146		
Lower Township (Diamond Beach)	0.000	0.001		
West Cape May	0.173	0.235		
<b>Cape May Region</b>	<b>1.955</b>	<b>2.136</b>	<b>3.000</b>	<b>+0.864</b>
Ocean City	5.390	5.637		
Upper Township (Marmora)	0.000	1.583		
<b>Ocean City Region</b>	<b>5.390</b>	<b>7.220</b>	<b>8.240</b>	<b>+1.020</b>
Avalon	2.030	2.106		
Dennis Township (GSP Rest Area)	0.013	0.013		
Middle Township	0.429	1.285		
Middle Township (Crest Haven)	0.252	0.260		
Sea Isle City	2.397	2.956		
Stone Harbor	0.976	1.156		
Upper Township (Strathmere)	0.000	0.000		
Woodbine Borough	0	0.605		
<b>Seven Mile Beach / Middle Township Region</b>	<b>6.098</b>	<b>8.381</b>	<b>7.096</b>	<b>-1.285</b>
Lower Township (Shawcrest)	0.091	0.092		
Middle Township (Rio Grande)	0.429	1.026		
North Wildwood City	2.213	2.300		
West Wildwood Borough	0.240	0.250		
Wildwood City	2.154	3.765		
Wildwood Crest	0.240	2.313		
<b>Wildwood / Lower Township Region</b>	<b>5.366</b>	<b>9.746</b>	<b>14.180</b>	<b>+4.434</b>
Lower Township	2.244	2.709		
Middle Township (Green Creek & Del Haven)	0.183	0.199		
<b>Lower Township MUA</b>	<b>2.427</b>	<b>2.908</b>	<b>4.000</b>	<b>+1.091</b>



## V. NITRATE DILUTION ANALYSIS - NON-SEWER SERVICE AREA

### *Antidegradation Analysis of Septic Management Area*

In areas outside of sewer service areas, the default wastewater management alternative is discharge to groundwater of 2,000 gallons per day or less, commonly referred to as septic systems. The assessment of water quality impacts from development on septic systems relies on nitrate concentration. In this analysis, nitrate acts as a conservative surrogate for any of a number of constituents that could be discharged from a septic system (e.g. cleaners, solvents, pharmaceuticals, etc.). Nitrate is chosen because it is highly soluble in water, and because it is a stable compound that by itself could render water unsuitable for human consumption. The capacity to support septic systems without violating groundwater quality standards is determined by the amount of dilution available. The WQMP Rules advocate a watershed approach to assessing the adequacy of available dilution to meet future development on septic systems. Using this approach, available dilution, (essentially groundwater recharge), is calculated within a HUC 11 watershed and translated into a finite amount of wastewater that can be discharged, which in turn can be translated into a finite number of housing units that can be supported while maintaining a target concentration of nitrate in groundwater. Zoning is then applied to the available land in that same watershed, outside of any sewer service area, to calculate the number of units that could be developed on septic systems. The results of these two analyses are then compared and if the number of units based on zoning does not exceed the maximum units that can be supported, adequate capacity has been demonstrated. If the number of units allowed by zoning exceeds that which can be supported in a particular watershed, then some adjustment to zoning within that watershed is required.

The NJDEP WQMP Rule (N.J.A.C. 7:15-5.25(e)) requires the CMCWMP to determine the development density that can be accommodated in undeveloped and underdeveloped areas that will result in attainment of 2.0 mg/L nitrate in the ground water on a HUC11 watershed basis. This section summarizes the nitrate dilution modeling calculations and results for the lot density (minimum lot size) that can be supported in the septic management areas of the municipality to meet the nitrate target goal.

The Nitrate Dilution Analysis determines the amount of land contributing to nitrate dilution and groundwater recharge, which in turn determined the average septic density within each HUC11 watershed in the municipality required to meet the NJDEP's 2 mg/L target nitrate concentration anti-degradation policy and the maximum number of new septic systems that can be supported in each HUC11.

The nitrate dilution analysis for septic systems is 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. This is due to the fact that while certain areas may be unbuildable, such as riparian zones or steep slopes, they still contribute to the overall available dilution of nitrate in groundwater. These areas were also not removed when analyzing the available dilution on a HUC11 basis used to establish the maximum number of units that can be built in a watershed and continue to meet the 2 mg/L nitrate target. Thus, while some areas may contribute less overall groundwater recharge, due to factors such as soils or topography, these limitations have already been taken into consideration when calculating the maximum average density allowable.

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 watershed. These assumptions are implicit in the nitrate dilution model developed by NJDEP.



The WQMP Rule does not mandate uniformly zoning minimum lot sizes at the calculated densities across the watershed. Rather, this comparable residential zoning density represents the total number of units that, if built, would not result in a degradation of groundwater quality within a given watershed by exceeding the 2 mg/L nitrate limit. The NJDEP advocates zoning to allow for center-based development, clustering, and protection of environmental features and agriculture land.

**Table 1-7: Antidegradation Analysis of Septic Management Areas** below presents the maximum number of new residential units that can be developed within the septic management areas of each municipality without substantially degrading the water quality within each HUC11 Watershed. The Potential New Units is then compared against the Target Septic Units for each HUC11 Watershed to determine whether the zoning will result in degradation of the watershed above the 2 mg/L nitrate standard.

<b>HUC11 Watershed</b>	<b>Municipality</b>	<b>Recharge (Acres)</b>	<b>Septic Density (Acres/Septic)</b>	<b>Target (Septic Units)</b>	<b>Potential New Units</b>	<b>Surplus(+) / Deficit(-)</b>	<b>Meets Target?</b>
02040206210 West Creek / East Creek / Riggins Ditch	Dennis Township	174	6	29	6	+23	Yes
	<b>Subtotal</b>	<b>174</b>	<b>N/A</b>	<b>29</b>	<b>6</b>	<b>+23</b>	<b>Yes</b>
02040206220 Dennis Creek	Dennis Township	2,983	6.2	481	250	+231	Yes
	Middle Township	772	8.8	88	54	+34	Yes
	<b>Subtotal</b>	<b>3,755</b>	<b>N/A</b>	<b>569</b>	<b>338</b>	<b>+265</b>	<b>Yes</b>
02040206230 Cape May Tribes West	Lower Township	3,074	6.1	504	186	+318	Yes
	Middle Township	3,159	7.9	400	332	+68	Yes
	West Cape May	58	7.9	7	6	+1	Yes
	<b>Subtotal</b>	<b>6,291</b>	<b>N/A</b>	<b>911</b>	<b>839</b>	<b>+387</b>	<b>Yes</b>
02040302060 Patcong Creek/Great Egg Harbor Bay	Upper Township	38	8.7	4	10	-6	No
	<b>Subtotal</b>	<b>38</b>	<b>N/A</b>	<b>4</b>	<b>10</b>	<b>-6</b>	<b>No</b>
02040302070 Tuckahoe River	Dennis Township	414	6.1	68	21	+47	Yes
	Upper Township	3,110	6.1	510	398	+112	Yes
	Woodbine Borough	227	6.1	37	39	-2	No
	<b>Subtotal</b>	<b>3,751</b>	<b>N/A</b>	<b>615</b>	<b>503</b>	<b>+157</b>	<b>Yes</b>
02040302080 Cape May Bays & Tribes East	Dennis Township	1,454	8.8	165	349	-184	No
	Lower Township	5,485	8.8	623	311	+312	Yes
	Middle Township	1,044	6.2	168	170	-2	No
	Upper Township	514	8.8	58	268	-210	No
	West Cape May	29	8.8	3	15	-12	No
	<b>Subtotal</b>	<b>8,526</b>	<b>N/A</b>	<b>1,017</b>	<b>1,223</b>	<b>-96</b>	<b>No</b>
02040302940 Atlantic Coast (34th St to Cape May Pt)	Lower Township	36	8.6	4	0	+4	Yes
	Upper Township	57	8.6	7	0	+7	Yes
	<b>Subtotal</b>	<b>93</b>	<b>N/A</b>	<b>11</b>	<b>0</b>	<b>+11</b>	<b>Yes</b>



Based on the buildout analyses, future development within the Cape May Bays & Tributaries East HUC11 watershed (02040302080) will exceed the target septic densities within Dennis Township, Middle Township, Upper Township and West Cape May Borough.

The analysis also indicates that the target septic density within the Tuckahoe River HUC11 watershed (02040302070) in Woodbine Borough and the Patcong Creek/Great Egg Harbor Bay HUC11 watershed (02040302060) in Upper Township will be exceeded. However, given the limited number of potential units in those watersheds, these deficiencies are de minimis and would not result in any substantial degradation of water quality.

## VI. WASTEWATER FACILITY TABLES

The wastewater facility tables for all sanitary and/or process wastewater discharge to surface water facilities and those sanitary and/or process wastewater discharge to groundwater facilities discharging greater than 2,000 gallons per day (i.e., requiring NJPDES permits) are listed below. Domestic wastewater treatment facilities which may serve one or multiple municipalities are included below. Individual onsite domestic treatment facilities, onsite sanitary subsurface sewage disposal system general permit (T-1 Permit) treatment facilities, and/or industrial treatment facilities which treat only industrial process wastewater, and/or facilities serving industrial land uses that have independent wastewater treatment facilities that treat and discharge manufacturing process waste and/or sanitary sewage that may be discharged to ground water or to surface water are included in the municipal chapters.

### *Domestic Wastewater Facilities With Sewer Service Area in Multiple Municipalities*

<b>Table 1-8: Cape May Region Wastewater Treatment Facility</b>		
1. Existing or Proposed Facility:	Existing	
2. NJPDES Permit Number:	NJ0020371	
3. Discharge Type:	A – Domestic Discharge to Surface Water (DSW)	
4. Receiving Water or Aquifer:	Atlantic Ocean	
5. Classification of Receiving Water:	SC	
6. Owner of Facility:	Cape May County Municipal Utilities Authority	
7. Operator of Facility:	Cape May County Municipal Utilities Authority	
8. Co-Permittee of Facility:	Not Applicable	
9. Location of Facility:		
a. Municipality & County	Lower Township, Cape May County	
b. Street Address	545 Sunset Blvd	
c. Block(s) and Lot(s)	Block 748, Lot 2802	
10. Location of Discharge:	Latitude: 38° 56' 38.0" Longitude: 74° 57' 42.5"	
11. Design Capacity:	3.670 MGD	
12. Summary of wastewater flows:	<b>Existing Flow (MGD)</b>	<b>Build-out or 20-Year Future (Year 2040) (MGD)</b>
Cape May City	1.655	1.754
Cape May Point Borough	0.127	0.146
Lower Township	0.000	0.001
West Cape May Borough	0.173	0.235
<b>Facility Total</b>	<b>1.955</b>	<b>2.136</b>



<b>Table 1-9: Ocean City Region Wastewater Treatment Facility</b>		
1. Existing or Proposed Facility:	Existing	
2. NJPDES Permit Number:	NJ0035343	
3. Discharge Type:	A – Domestic Discharge to Surface Water (DSW)	
4. Receiving Water or Aquifer:	Atlantic Ocean	
5. Classification of Receiving Water:	SC	
6. Owner of Facility:	Cape May County Municipal Utilities Authority	
7. Operator of Facility:	Cape May County Municipal Utilities Authority	
8. Co-Permittee of Facility:	Not Applicable	
9. Location of Facility:		
a. Municipality & County	Ocean City, Cape May County	
b. Street Address	45th Street & Simpson Ave	
c. Block(s) and Lot(s)	Block 5150, Lot 13	
10. Location of Discharge:	Latitude: 39° 13' 24.1" N    Longitude: 74° 36' 33.5" W	
11. Design Capacity:	8.240 MGD	
12. Summary of wastewater flows:	<b>Existing Flow (MGD)</b>	<b>Build-out or 20-Year Future (Year 2040) (MGD)</b>
Ocean City	5.399	5.682
Upper Township (Marmora) <sup>5</sup>	0.000	0.560
<b>Facility Total</b>	<b>5.399</b>	<b>6.242</b>

<sup>5</sup> Upper Township is proposing to connect Marmora Town Center and existing businesses along Roosevelt Boulevard into the CCMUA Ocean City Region WTP, pending agreement with the CCMUA, NJDEP and Ocean City.

<b>Table 1-10: Seven Mile Beach/Middle Twp Region Wastewater Treatment Facility</b>		
1. Existing or Proposed Facility:	Existing	
2. NJPDES Permit Number:	NJ0052990	
3. Discharge Type:	A – Domestic Discharge to Surface Water (DSW)	
4. Receiving Water or Aquifer:	Atlantic Ocean	
5. Classification of Receiving Water:	SC	
6. Owner of Facility:	Cape May County Municipal Utilities Authority	
7. Operator of Facility:	Cape May County Municipal Utilities Authority	
8. Co-Permittee of Facility:	Not Applicable	
9. Location of Facility:		
a. Municipality & County	Middle Township, Cape May County	
b. Street Address	1306 Moore Rd Crest Haven Complex Cape May Court House, NJ 08210	
c. Block(s) and Lot(s)	Block 115.01, Lot 10	
10. Location of Discharge:	Latitude: 39° 05' 06.6" Longitude: 74° 42' 07.9"	
11. Design Capacity:	7.67 MGD	
12. Summary of wastewater flows:	<b>Existing Flow (MGD)</b>	<b>Build-out or 20-Year Future (Year 2040) (MGD)</b>
Avalon Borough	2.030	2.106
Middle Township	0.429	1.285
Crest Haven	0.252	0.260
Sea Isle City	2.397	2.956
Stone Harbor Borough	0.976	1.156
Dennis Township (GSP Service Station)	0.013	0.013
Upper Township (Strathmere)	0.000	0.000
Woodbine	0	0.605
<b>Facility Total</b>	<b>6.098</b>	<b>8.381</b>

<b>Table 1-11: Wildwood/Lower Region Wastewater Treatment Facility</b>		
1. Existing or Proposed Facility:	Existing	
2. NJPDES Permit Number:	NJ0053007	
3. Discharge Type:	A – Domestic Discharge to Surface Water (DSW)	
4. Receiving Water or Aquifer:	Atlantic Ocean	
5. Classification of Receiving Water:	SC	
6. Owner of Facility:	Cape May County Municipal Utilities Authority	
7. Operator of Facility:	Cape May County Municipal Utilities Authority	
8. Co-Permittee of Facility:	Not Applicable	
9. Location of Facility:		
a. Municipality & County	Middle Township, Cape May County	
b. Street Address	2701 Rio Grande Blvd (Route 47 South) Rio Grande, NJ 08212	
c. Block(s) and Lot(s)	Block 1525, Lot 2	
10. Location of Discharge:	Latitude: 38° 59' 56.8" Longitude: 74° 51' 13.7"	
11. Design Capacity:	14.18 MGD	
12. Summary of wastewater flows:	<b>Existing Flow (MGD)</b>	<b>Build-out or 20-Year Future (Year 2040) (MGD) <sup>6</sup></b>
Lower Township (Shawcrest)	0.091	0.092
Middle Township (Rio Grande)	0.429	1.026
North Wildwood City	2.213	2.300
West Wildwood Borough	0.240	0.250
Wildwood City	2.154	3.765
Wildwood Crest Borough	0.240	2.313
<b>Facility Total</b>	<b>5.366</b>	<b>9.746</b>

<sup>6</sup> Wildwood City's buildout is a 30-year projection to year 2050.



<b>Table 1-12: Lower Township Municipal Utilities Authority Wastewater Treatment Facility</b>		
1. Existing or Proposed Facility:	Existing	
2. NJPDES Permit Number:	NJ0023809	
3. Discharge Type:	A – Domestic Discharge to Surface Water (DSW)	
4. Receiving Water or Aquifer:	Atlantic Ocean	
5. Classification of Receiving Water:	SC	
6. Owner of Facility:	Lower Township Municipal Utilities Authority	
7. Operator of Facility:	Lower Township Municipal Utilities Authority	
8. Co-Permittee of Facility:	Not Applicable	
9. Location of Facility:		
a. Municipality & County	Lower Township, Cape May County	
b. Street Address	2900 Bayshore Rd Villas, NJ 08251	
c. Block(s) and Lot(s)	Block 410.01, Lot 46.01	
10. Location of Discharge:	Latitude: 39° 00' 16.6" Longitude: 74° 55' 54.4"	
11. Design Capacity:	4.000 MGD	
12. Summary of wastewater flows:	<b>Existing Flow (MGD)</b>	<b>Build-out or 20-Year Future (Year 2040) (MGD)</b>
Lower Township	2.244	2.709
Middle Township	0.183	0.199
<b>Facility Total</b>	<b>2.427</b>	<b>2.908</b>

### ***On-Site Domestic Treatment Facilities***

Wastewater Facility Tables for individual on-site domestic treatment facilities are provided within the municipal chapters.



## VII. STRATEGIES TO MITIGATE POTENTIAL CAPACITY DEFICIENCIES

### *Strategies to Mitigate Capacity Deficiency in Sewer Service Areas*

Where a sewage treatment plant does not have sufficient remaining capacity to meet the future wastewater needs of the sewer service area, the WMP agency must identify and evaluate strategies for addressing the potential capacity deficiencies, including management approaches and infrastructure improvements. As part of this evaluation, the WMP agency has considered the growth trajectory for the all of the regional and municipal wastewater service area in Cape May County based on total buildout projections for non-urbanized municipalities and 20-year population and employment projections for urbanized municipalities. The total projected flow at full buildout for the Seven Mile Beach/Middle Township Region sewer service area is 8.381 MGD, which would exceed the plant's current permitted capacity of 7.67 MGD. To address the future capacity deficiencies for the Seven Mile Beach/Middle Township Region WTP, the CMCMUA has identified two potential strategies<sup>7</sup>.

The preferred strategy is to redirect the existing and future flow of 1.285 MGD from Middle Township to the CMCMUA Wildwood/Lower Region WTP. As shown in **Table 1-13**, the revised wastewater projections for the Seven Mile Beach/Middle Township Region WTP for a total projected flow of 7.096 MGD, which is within the current permitted capacity of 7.67 MGD.

<b>Table 1-13: Revised Wastewater Projections for Seven Mile Beach/Middle Twp Region WTP</b>	
	<b>Build-out or 20-Year Future (Year 2040) (MGD)</b>
Avalon Borough	2.106
Crest Haven	0.260
Sea Isle City	2.956
Stone Harbor Borough	1.156
Dennis Township (GSP Service Station)	0.013
Middle Township (Redirected)	0.000
Upper Township (Strathmere)	0.000
Woodbine	0.605
<b>Facility Total</b>	<b>7.096</b>
<b>Permitted Capacity</b>	<b>7.670</b>

As shown in **Table 1-14**, the redirected flow from Middle Township would result in a total wastewater projection of 11.031 MGD for the Wildwood/Lower Region WTP, which is within the permitted capacity of 14.180 MGD.

<sup>7</sup> A conference call was held on January 30, 2019 to discuss potential strategies to address the capacity deficiency for the Seven Mile Beach/Middle Township Region Wastewater Treatment Plant. CMCMUA was represented on the call by Joe Rizzuto, Executive Director; Josh Palombo, Wastewater Program Manager; and Tom LaRocco, Chief Engineer.

<b>Table 1-14: Revised Wastewater Projections for Wildwood/Lower Region WTP</b>	
	<b>Build-out or 20-Year Future (Year 2040) (MGD)</b>
Lower Township (Shawcrest)	0.092
Middle Township (Redirected)	1.285
Middle Township (Rio Grande)	1.026
North Wildwood City	2.300
West Wildwood Borough	0.250
Wildwood City	3.765
Wildwood Crest Borough	2.313
<b>Facility Total</b>	<b>11.031</b>
<b>Permitted Capacity</b>	<b>14.180</b>

The second potential strategy would involve expansion of the Seven Mile Beach/Middle Township Region WTP to increase permitted flow up to the design capacity of 9.270 MGD. CMCMA has stated that this strategy would be less cost effective than redirecting flows from Middle Township.

### **Strategies to Mitigate Capacity Deficiency in Non-Sewer Service Areas**

As noted previously and tabulated in **Table 1-7**, there are certain HUC11 watersheds where the potential number of equivalent dwelling units under zoned build-out will exceed the nitrate dilution or septic carrying capacity. Based on the buildout analysis, Cape May Bays & Tributaries East HUC11 watershed (02040302080) will exceed the target septic density by 96 units at full buildout within Dennis Township, Lower Township, Middle Township Upper Township and West Cape May Township. The WQMP rules require that municipalities, in concert with the County and the NJDEP, develop strategies to prevent the build-out from exceeding the available dilution capacity of the remaining undeveloped lands in those watersheds. Strategies to mitigate deficiency in specific watersheds and zoning districts may include:

1. Identification of areas appropriate for sewer service
2. Requiring ISSDS to reach a higher level of treatment
3. Open space acquisition (or preserving undeveloped land to limit future development)
4. Zoning changes – rezoning areas to reduce the potential development yield that may result within the septic management area.

Unfortunately, due to the number of equivalent units already approved and the number of lots that would be grandfathered, decreasing the density (increasing the minimum lot size) will not resolve the deviation in the Cape May Bays & Tributaries East HUC11 watershed. In order to protect the water quality of this HUC11 Watershed from degradation, it is recommended that each municipality adopt a “Cape May Bays & Tributaries East Overlay Zone”. This area is designated “Restricted Septic Area (Planning Flows of 2,000 GPD or Less AND Less Than 6 Residential Units)” on **Map 1-5**. Within this area, residential development or subdivisions with a total of less than 6 dwelling units are permitted in accordance with the underlying zoning, but residential developments of 6 or more units must undergo a nitrate dilution analysis to ensure that the individual or other subsurface sewage disposal systems can meet the 2 mg/L nitrate



planning standard on-site. Middle Township and Dennis Township have already adopted a Cape May Bays & Tributaries East Overlay Zone into their Zoning Ordinances.

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## VIII. APPENDIX

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- Map 1-1: Regional Location
- Map 1-2: Regional Jurisdiction
- Map 1-3: Existing Land Use
- Map 1-4: Wastewater Regions
- Map 1-5: Adopted Sewer Service Areas
- Map 1-6: Hydrologic Features
- Map 1-7: Natural Features

Cape May County Board of Chosen Freeholders Resolution 577-12 endorsing the submission of Proposed Sewer Service Area Maps to the New Jersey Department of Environmental Protection on or before July 13, 2012

Cape May County Board of Chosen Freeholders Resolution XXX-19 endorsing the submission of the Cape May County Wastewater Management Plan to the New Jersey Department of Environmental Protection