Wastewater Management Plan for Morris County

Amending the Following Areawide Water Quality Management Plans:

Upper Raritan, Northeast, Upper Delaware and Sussex County

Submitted by the Board of Chosen Freeholders of Morris County

Originally adopted: January 30, 2014

Date of Current Submittal: _____

Approved by the New Jersey Department of Environmental Protection:

_____

Prepared By:

Christine Marion, Planning Director

Morris County Planning Board

PO Box 900

30 Schuyler Place, 4th Floor

Morristown, New Jersey 07963-0900

(973) 829-8120

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I. Introduction

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 open space 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 Morris County Wastewater Management Plan (WMP) is separated in to two volumes: Volume I is the countywide "framework" for the WMP, which includes the Future Wastewater Service Areas map adopted on April 25, 2013, Significant Actions being undertaken, major text components and narratives, information required for minor and major wastewater treatment facilities, and mapping, for the county as a whole. Volume II contains each individual municipal WMP chapter adopted thus far.

Alternative Assignment of Wastewater Management Planning Responsibility

As of the date of submittal, wastewater management planning responsibility for the entire County remains with the County Board of Chosen Freeholders, except for the Township of Washington. The Township of Washington is currently the entity responsible for the wastewater management planning in that municipality as per N.J.A.C. 7:15-2.8. (See Appendix A)

The Morris County Board of Chosen Freeholders has identified the Morris County Office of Planning and Preservation (MCP&P) as the county agency charged with WMP preparation and maintenance. Any proposed revisions or amendments to this wastewater management plan shall be submitted to the Department by MCP&P.

Previously Approved WMPs within Morris County

The WMP for Morris County incorporates or replaces part or all of a variety of previously approved WMPs prepared by municipalities and wastewater authorities.

The Water Quality Management Plan (WQMP) rule provides that any local WMP previously approved by the New Jersey Department of Environmental Protection (NJDEP) may remain in force and effect until ten (10) years from the date of submittal of this plan. (Previously adopted WMPs: Florham Park, Chatham Township, Jefferson Township and Washington Township are only valid for six (6) years as they were completed under

previously adopted rules.) In Morris County, only the Township of Chatham, and Jefferson Township have currently valid WMPs as listed in Table 1. Expired WMPs still remain in effect until they are replaced or superseded by a more recently adopted WMP.

Table 1 lists previously adopted WMPs. The information from the Florham Park Borough adopted WMP is incorporated by reference in this WMP for Morris County. The remaining municipalities, for which Morris County is the responsible wastewater management planning agency, are represented by the municipal chapters found in Volume II of the WMP. This WMP will be updated as individual municipal chapters are adopted.

Table 1 - Current WMPs That Remain in Effect

WMP Planning Area	**Municipality (or parts thereof)**	**Adoption Date**	**Expiration Date**
Chatham Township[1]	Chatham Township	January 30, 2014	January 30, 2020
Florham Park Borough[1]	Florham Park Borough Morris Twp. East Hanover Twp. Hanover Twp.	February 23, 2012	February 23, 2018
Washington Township[1]	Washington Township	July 24, 2012	July 24, 2018
Jefferson Township[1]	Jefferson Township	June 30, 2015	June 30, 2021

[1] These WMPs are only valid for six (6) years from their adoption date.

The WMP for Morris County – Volume II includes a chapter for Chatham Township, Jefferson Township, Mine Hill Township and Florham Park Borough. Municipalities that are not part of this WMP for Morris County are listed in **Table 2** below.

Table 2 - Municipalities Not Addressed in this WMP for Morris County

Boonton Town	Boonton Township
Butler Borough	Chatham Borough
Chester Borough *	**Chester Township ***
Denville Township	Dover Town
East Hanover Township	Hanover Township
Harding Township	**Kinnelon Borough** *
Lincoln Park Borough	Madison Borough
Mendham Borough	Mendham Township
Morris Township	Montville Township
Morristown Town	Morris Plains Borough
Mt Arlington Borough	Mountain Lakes Borough
Netcong Borough	Mt Olive Township
Parsippany-Troy Hills Township	Long Hill Township
Pequannock Township	**Randolph Township** *
Riverdale Borough	Rockaway Borough
Rockaway Township *	Roxbury Township
Victory Gardens Borough	**Wharton Borough ***

Note: Municipalities listed in bold with an asterisk are conforming to the Highlands RMP. Those chapters are being developed cooperatively by the Highlands Council and the municipality. This table will be updated as individual municipal chapters are adopted.

Overview of Morris County

Morris County, located in north-central New Jersey, occupies an area of approximately 481 square miles or 308,000 acres. The County has developed since the 1700s, moving from east to west along canals, railways and later, major roadways, following the availability of

vacant land. Development concentrated in the eastern portion of the County, where land is relatively level, spreading from metropolitan areas to the east. Early patterns of development focused in well-defined towns such as Morristown, where commercial and high density residential uses were clustered, with lower density residential and agricultural uses fanning out from the center. The development of the towns like Netcong, Dover, Montville and Boonton has been comparable, where industrial facilities, often located in proximity to the Morris Canal (and later railways), functioned to create centers with decreasingly intense uses located around them.

Development patterns post-WWII have been influenced largely by increased automobile ownership and the construction of new roadways, which opened up greater opportunities for commercial development, workforce commuting and access to formerly rural areas of the County for residential and other development. Also driving changing land use patterns was the introduction of single use zoning outside of existing centers, a practice which separated residential, commercial and industrial uses, increasing land requirements, creating modern suburbs and hastening the development of marginal farms for other uses. This conversion of rural to suburban development began in earnest in the 1960's.

The progress of this ongoing conversion has slowed substantially in the last decade. Significant factors include a reduction in the availability of wastewater treatment capacity and the dwindling supply of vacant, developable land. The current economic downturn has hindered new applications for development, except in the northern and southwestern portions of the county, where significant development in the Highlands Preservation areas has virtually stopped as a result of the passage of the Highlands Water Protection and Planning Act.

Present development patterns reflect both historic trends and modern zoning requirements. Higher density residential use is focused in traditional centers and urbanized areas found principally in the eastern portion of the County or in centers located along major transportation corridors (Route 10, Route 46 and Route 80) which bisect the County's northern and southern areas. The availability of existing wastewater infrastructure remains a principal determinant of this higher density development, which is reflected in Morristown's current building boom and in recent plans for downtown redevelopment in the Town of Dover. Lower density, large lot single family housing is focused primarily in the northern and northwest and in the southern and southwestern portions of the County, where the availability of infrastructure is limited; where topography has made development more difficult and where larger lot zoning has been more prevalent.

Areas of commercial development remain in historic centers, within traditional downtown shopping districts, many of which are connected by rail. With few exceptions, the amount of such use continues to fall or focus increasingly on local service needs. Newer industrial, office and major retail uses are found in greatest concentrations straddling Routes 10 and 46, or in the vicinity of Routes 80 or 287, which typically connect older historic centers.

Following national trends, larger retail malls and big box centers focus on these roadways, as do large office or office/industrial uses or campuses. Modern commercial development demands proximity to these major transportation corridors for easy access to commuting employees and to regional markets and customers.

As per the recent Decennial Census from the U.S. Census Bureau, Morris County's population in 2010 was 492,276. The most recent estimate places the county's population as of July 1, 2017 at 499,693 (U.S. Census Bureau, 2017 Population Estimates Program), a 6.3% increase since 2000. The county's rate of population growth is somewhat lower than the State's rate of 7.0%, and ranks near the middle compared to the other 20 counties which range from a high of 17.0% (Ocean) to a low of -8.6% (Cape May)[1].

Overview of Current Wastewater Service

Centralized wastewater treatment systems in Morris County serve approximately 41% of the total County area and approximately 70% of the total County population. Centralized wastewater treatment systems treat flow collected from within their designated SSA. SSAs may include industrial businesses that discharge process wastewater to the collection system for treatment by a facility not owned by that business. The wastewater collection and treatment infrastructure generally serve the more densely populated urban and suburban communities. Details of these existing systems are presented in Section II.

Rural and less densely developed areas not served by SSAs are defined as Non Sewer Service Areas (Non SSAs) and are served by septic systems, also referred to in this WMP as Individual Subsurface Sewage Disposal Systems (ISSDS). These areas were previously referred to as General Service Areas (GSAs).

There are no combined sewers that include both storm water and wastewater in the same system within Morris County.

Overview of Major Environmental, Regional and Local Considerations to Wastewater Service

The 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 the following environmentally sensitive features alone or in combination:

- Wetlands;
- Riparian zones: (300-feet in width) along both sides of a Category One (C1) waterway

[1] SOURCE: https://planning.morriscountynj.gov/data/

- Natural Heritage Priority Sites; and/or
- State and Federal threatened and endangered species habitat as depicted in current or approved older version of the NJDEP Landscape Project Area database (Rank 3, 4, 5).

A more detailed discussion of these environmental considerations is presented in Section III, Environmental and Other Land Features. Additional regional and local land use planning objectives used in delineating appropriate areas for public sewer service are discussed in the Section IV – Delineation of Service Areas and Planning Integration and in each individual municipal chapter included in this WMP.

Overview of Future Wastewater Service Areas

Sewer Service Areas (SSA)

Sewer service areas (SSA) are those lands from which generated wastewater is designated to flow to a domestic treatment works or industrial treatment works, i.e. a sewage treatment plant. The NJDEP delineated the SSA, with input from Morris County, municipalities and the public, by reviewing the previously approved SSAs and removing contiguous environmentally sensitive areas of 25 acres or more pursuant to the sewer service area delineation criteria at N.J.A.C. 7:15-4.4.

The following facilities are seeking approval to increase their NJPDES permit effluent limits to reflect either existing or future expected wastewater flow to these facilities.

- Rockaway Valley Regional Sewerage Authority (RVRSA) has received its final permit to expand from 12 MGD up to 15 MGD, conditioned upon an amendment to the WQMP to recognize the necessity of the increase in permitted flow. See summary of Significant Actions for specifics.

Non Sewer Service Area (Non SSA) [Formally called the General Service Areas (GSA) in previously adopted chapters]

All areas not in a SSA, including those areas withdrawn from the SSA as described above, are designated as Non Sewer Service Areas (Non SSAs), Planning Flows of 2,000 Gallons per Day (GPD) or less, and are served by individual subsurface sewage disposal systems (ISSDS), i.e. septic systems.

Proposed developments with anticipated discharge to groundwater (DGW) planning flows greater than 2,000 gpd that require a New Jersey Pollutant Discharge Elimination System (NJPDES) permit, or that proposed significant modifications to an existing NJPDES

permitted facility not included in this plan, will require amendment of this WMP and subsequent adoption by NJDEP.

It should be noted that flow is not a permit limit per se, but is the basis on which NJPDES effluent limits are calculated. Section V – Future County Wastewater Demand and Facilities presents the results of the build-out analysis for each SSA and the associated sewage treatment plants.

Summary of Significant Actions

The Water Quality Management Planning Rules that were previously adopted on July 7, 2008 necessitated a modification to certain SSAs based on environmental sensitivity and local planning objectives as described in this document. Map 2M and 3M in each municipal chapter shows the changes in SSA as a result of this wastewater management plan. Maps with the designation "M" are municipally based (i.e. 2M, 3M, 4M) versus the county-wide maps which are numbered 1, 2, 3, 4, 5a, 5b. Municipally based maps will be created for each municipal chapter that is developed for Maps 2, 3, and 4.

- Chatham Main (Chatham WPCP #1 [NJ0020290]) and Chatham Glen (Chatham WPCP #2 [NJ0052256]) are being combined. This is necessitated as per an Administrative Consent Order (ACO) between the NJDEP and Chatham Township dated June 26, 2003 to address Total Dissolved Solids (TDS) effluent limitations that Chatham Main is unable to meet. All flow from Chatham Glen will be pumped to Chatham Main to be treated. The outfall from Chatham Main will be relocated to a new location in the main stem of the Passaic River near the current Chatham Glen outfall upon an adopted amendment to the Northeast WQMP (adopted January 30, 2014). The proposed discharge point will be downstream from the location where the Black Brook enters the Passaic River.

  Upon relocation of the outfall pipe to discharge treated combined wastewater from these two facilities, the NJDPES permit for Chatham Glen NJDPES/DSW Permit No. NJ0052256 will no longer be required and will be terminated.

- The Township of Jefferson currently operates two wastewater treatment plants that are located in close proximity to each other; Water's Edge/Moosepac and White Rock Lake Treatment Plants (NJ0026867). It is the intent of the Township to eliminate the Moosepac Treatment Plant and pump all wastewater from this service area to the White Rock Lake Facility. The White Rock Lake facility currently has enough capacity to accept the flow from Moosepac without expanding. Both of these STPs are located in the Preservation Area and are subject to NJDEP Highlands Regulations and conformance with the Highlands Regional Master Plan.

- The RVRSA Sewage Treatment Plant (STP) is currently permitted at 12 million gallons per day (MGD) under NJPDES permit NJ0022349, but also contains effluent limitations at a flow of 15 MGD to accommodate an expansion of their permitted capacity. An anti-

degradation analysis has already been completed by RVRSA and approved by the NJDEP for a flow of up to 15 MGD. The RVRSA may require the construction of two (2) additional final clarifiers, one (1) additional chlorine contact tank, and related improvements in order to be able to expand the plant beyond 12 MGD. RVRSA's application for an expansion of their permitted capacity must be submitted to the NJDEP as a Treatment Works Approval (TWA) package. The construction cost for this expansion is estimated to be about $7 million, which would translate to a capital loan cost of approximately $9.1 million (in 2018 dollars). RVRSA's board would have to approve this expansion, which would likely not occur until the actual flow begins to approach the current 12 MGD permitted capacity. The STP capacity expansion and associated effluent limits require an amendment to the Northeast WQMP and RVRSA WMP, an approval of the TWA, and completion of the necessary construction before they can go into effect.

II. Existing Infrastructure

This section addresses wastewater facilities within the County.

Major Wastewater Treatment Facilities

Table 3 below lists the major domestic wastewater treatment facilities and the municipality or municipalities they serve. There are 25 major facilities serving Morris County. For the purpose of this WMP, major facilities are generally considered to fall into one the following categories:

- Non-industrial facilities that provide treatment to an entire municipality or
- A regionalized treatment plant serving two or more municipalities in one or more counties or:
- Residential or multi-use facilities serving distinct areas within municipalities where the potential for additional wastewater generation could occur.
- Unassigned Sewer Service Areas could potentially fall into this category.

Existing SSAs served by these wastewater facilities are shown on a county-wide basis on Map 2 and on a municipal basis on Map 2M found in each individual municipal chapter. Future SSAs proposed for each wastewater facility are shown on a county-wide basis on Map 3 and on a municipal basis on Map 3M found in each individual municipal chapter. Tables in Appendix C provide detailed information on each facility.

Existing wastewater infrastructure within the County was delineated with the use of collaborating information from municipalities, previous wastewater management plans, existing infrastructure documentation, and input from local wastewater entities.

SSAs may include industrial businesses that discharge process wastewater to the collection system for treatment by a facility not owned by that business.

An Unassigned Sewer Service Area is being proposed for Mine Hill Township. Additional analysis is needed to determine if this area can connect to an existing regional STP or a new DSW or DGW STP will be built.

Table 3 – Major Wastewater facilities and Municipalities Served

Wastewater Utility	**Municipalities Served**
Ajax Terrace Water Pollution Control Plant	Roxbury Township
Butterworth Sewage Treatment Plant	Morris Plains Borough Parsippany Troy-Hills Township Randolph Township
Chatham Township WPCP #1 (Chatham Main)	Chatham Township
Chester Borough Wastewater Treatment Plant	Chester Borough
Clover Hill Sewage Treatment Plant	Mount Olive Township
Florham Park Sewerage Utility	Borough of Florham Park East Hanover Township Morris Township
Greystone Park Psych. Hospital	Parsippany-Troy Hills Township
Hackettstown Municipal Utilities Authority Sewage Treatment Plant	Mount Olive Township Washington Township Hackettstown (Warren County) Independence (Warren County) Mansfield (Warren County)
Hanover Municipal Utilities Authority Sewage Treatment Plant	East Hanover Township Hanover Township Morris Plains Borough Morris Township Parsippany-Troy Hills Township
Hercules Company WPCP	Roxbury Township
Long Hill Township Sewage Treatment Plant	Long Hill Township

Wastewater Utility	**Municipalities Served**
Long Valley Wastewater Treatment Plant	Washington Township
Mendham Borough Sewage Treatment Plant	Mendham Borough
Molitor Water Pollution Control Facility (Madison-Chatham Joint Meeting)	Chatham Borough Chatham Township Madison Borough
Morristown Sewer Utility Sewage Treatment Plant	Hanover Township Morris Township Morristown Town
Mount Olive Villages Sewer Company Sewage Treatment Plant	Mount Olive Township
Musconetcong Sewerage Authority Sewage Treatment Plant	Mount Arlington Borough Mount Olive Township Netcong Borough Roxbury Township Jefferson Township Byram (Sussex County) Hopatcong (Sussex County) Stanhope (Sussex County)
Parsippany-Troy Hills Sewage Treatment Plant	Denville Township East Hanover Township Montville Township Livingston Township (Essex County) Mountain Lakes Borough Parsippany-Troy Hills Township

Wastewater Utility	**Municipalities Served**
Rockaway Valley Regional Sewerage Authority Sewage Treatment Plant	Boonton Town Boonton Township Denville Township Dover Town Mine Hill Township Montville Township Parsippany-Troy Hills Township Randolph Township Rockaway Borough Rockaway Township Victory Gardens Borough Wharton Borough
Two Bridges Wastewater Treatment Plant	Butler Borough Kinnelon Borough Lincoln Park Borough Pequannock Township Riverdale Borough Bloomingdale (Passaic County) Fairfield (Essex County) North Caldwell (Essex County) West Caldwell (Essex County)
United Water Mid-Atlantic (Arlington Hills) Sewage Treatment Plant	Mount Arlington Borough Roxbury Township
Schooley's Mountain Wastewater Treatment Plant	Washington Township
White Rock Lake Sewage Treatment Plant	Jefferson Township
Woodland Sewage Treatment Plant	Florham Park Borough Madison Borough Harding Township Morris Township Morristown Town
Unassigned SSA	Mine Hill Township

Minor Wastewater Treatment Facilities

All facilities that are not classified as major facilities described above were categorized as a minor facility.

On-site, Non-industrial Wastewater Facilities

These minor 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. Tables 1a (DGW) and 1b (DSW), found in each municipal chapter, list all existing on-site, non-industrial treatment facilities that discharge greater than 2,000 gallons per day of domestic wastewater and are regulated under a NJPDES permit. Details of these facilities can be found within the municipal chapters and are shown on municipal map 3M and facility tables are included in Appendix C.

Industrial Treatment Works for Process Wastes and Sanitary Sewage

These minor facilities serve industrial land uses with 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 groundwater or to surface water. Tables 1a (DGW) and 1b (DSW), found in the municipal chapters, list all existing industrial treatment works that discharge greater than 2,000 gallons per day of process and wastewater and are regulated under a NJPDES permit. Details of these facilities can be found within the municipal chapters and facility tables are included in Appendix C.

III. Environmental and Other Land Features

This section includes a description of environmental and other land features used as constraints in preparation of this WMP. These features are significant to wastewater management planning for three reasons: they may influence the delineation of SSAs, 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. These features have been used in the development of maps of environmentally sensitive areas of 25 acres or more (ESA 25) where the extension of SSAs is restricted (see Section IV - Delineation of Service Areas, below). Environmentally Sensitive Areas are defined as any contiguous area of 25 acres or larger consisting of any of the following features alone or in combination:

- State and Federal Threatened and Endangered Species Habitat as shown on the current or approved older version of NJDEP's Landscape Project (Ranks 3, 4, 5) database.

- Natural Heritage Priority Sites excluding urban lands as identified by NJDEP using 2012 Land Use/Land Cover geographical information systems database as amended and updated. (For SSAs adopted for the FWSA maps or prior chapters, older layers were utilized. For future chapters, any SSA changes made will utilize the newest data available.)

- Category One waters and their tributaries. Surface waters that are designated Category One are listed in the Surface Water Quality Standards at N.J.A.C. 7:9B.

- Wetlands as mapped pursuant to 2012 Land Use/Land Cover shapefile available from NJDEP. (For SSAs adopted for the FWSA maps or prior chapters, older layers were utilized. For future chapters, any SSA changes made will utilize the newest data available.)

Map 5A shows hydrologic features and related areas. Map 5B shows other natural resources and land features. These features are summarized below. Most of these features are based on mapped data provided by the NJDEP, and the County has not verified the mapping of these areas. The location of these NJDEP mapped areas should be considered only in the context of this WMP. Site specific investigations and delineations may be necessary in connection with other projects.

Environmental Features

Surface Waters and Classifications

Map 5A shows the surface waters as mapped by NJDEP, and within the Highlands Region as modified by the NJ Highlands Council.

Surface waters designated as Category One are listed in the Surface Water Quality Standards at N.J.A.C. 7:9B. All waterways in the Highlands Preservation Area are classified as Category One. The Department's "Surface Water Quality Standards" GIS data layer was utilized to determine these waters.

Compliance with the riparian zone standards have been demonstrated by the adoption of Ordinances for Riparian Zone Protection by municipalities, which have been updated to be in compliance with the Flood Hazard Control Act Rules (N.J.A.C. 7:13) and the previously adopted Water Quality Management Rules (N.J.A.C. 7:15). The current Water Quality Management Rule (N.J.A.C. 7:15) does not require municipalities to adopt a Riparian Buffer Zone Ordinance. Previously adopted WMPs were required to do so, but WMP chapters adopted under the rule that was adopted on November 7, 2016 are not.

Freshwater Wetlands

Freshwater wetlands as mapped by the NJDEP based on 2012 LULC are shown on Map 5A. Freshwater Wetlands are regulated under the Freshwater Wetlands Protection Act Rules, which place stringent limits on development within these areas. The larger wetlands

complexes are located in the Piedmont physiographic province and include Bog and Vly Meadows, Great Piece Meadows, Black Brook Meadows and Troy Meadows. There are roughly 46,000 acres of wetlands representing 15% of the land in Morris County as per NJDEP Freshwater Wetlands mapping data.

Suitable Habitat for Threatened and Endangered Species

For purposes of this WMP, areas identified by the NJDEP as being suitable habitat for threatened and endangered species are shown on Map 5B. This area includes Landscape Project Areas (Ranks 3, 4 and 5) through the Landscape Project as described below. Four of the five available habitat types were used – forests, forested wetlands, emergent wetlands and grasslands. The coastal beaches and dunes habitat type is not applicable to the County. Approximately 167,000 acres or 54% of the land in Morris County falls within NJDEP's Landscape Project Areas Rank 3, 4, and 5 coverage.

Natural Heritage Priority Sites

Natural Heritage Priority Sites coverage identifies rare plant species and rare ecological communities. Map 5B shows the Natural Heritage Priority Sites mapped by NJDEP. There are approximately 12,500 acres or 4% of the lands in Morris County are designated as Natural Heritage Priority Sites.

Steep Slopes

The steep slopes were determined through an analysis performed by County staff in accordance with the regulations. It is intended to be used for guidance purposes and on site investigations and surveys should be used to confirm the actual field conditions.

Steep slopes are defined as any slope equal to or greater than 20 percent as measured over any minimum run of 10 feet. Steep slopes are determined based on contour intervals of two feet or less.

These slopes are mapped using Morris County's 4 Foot DEM derived from 2005 LiDAR Data. The development potential development of steep slopes is reduced by the Highlands Water Protection and Planning Act Rules and by municipal ordinance. WMP Chapters that were adopted under the previous WQMP rules were required to have a Steep Slope Ordinances (Washington Township, Jefferson Township, Chatham Township and Florham Park). Under the new WQMP rule (adopted November 7, 2016) municipalities are not required to have a Steep Slope Ordinance.

Mapping of Environmentally Sensitive Areas

Mapping of Environmentally Sensitive Areas (ESAs) is shown on Maps 5A and 5B. Both maps include municipal boundaries, wastewater management planning area and major roadways (county, state and federal) in the County.

Map 5A shows Hydrologic Features in Morris County including:

- NJDEP 2012 Wetlands
- Lakes/Waterbodies
- FEMA pFIRMS
- SWQS Classifications (C-1 waters, etc.)

Map 5B shows Environmental Features in Morris County including:

- Landscape Project 3.3 Data
- Natural Heritage Priority Sites
- Lakes/Waterbodies

This data was taken largely from datasets available through the NJDEP's Bureau of Geographic Information Systems (http://www.nj.gov/dep/gis/listall.html).

IV. Delineation of Service Areas and Planning Integration

This chapter provides the methodology used to delineate SSAs based on gathered data, mapping of environmentally sensitive areas, and consistency with other regional plans.

Sewer Service Area Delineation

Introduction

Sewer Service Areas were delineated by collaborating data from previous wastewater management plans, existing infrastructure documentation, and input from local wastewater entities and municipalities. Acquired data was analyzed and utilized to identify parcels currently being served by wastewater treatment facilities in the County. Future SSAs were determined by NJDEP and were subsequently provided to the County at the start of the WMP preparation process in March 2008. The County used this map as the basis for making technical corrections discussed below.

Draft Sewer Service Areas Created By NJDEP

Under the Water Quality Management Planning Rules, large contiguous ESAs, generally defined as 25 acres or greater in size were excluded from SSAs 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. Map 5A and 5B show the final results for the mapping of ESAs, based on the information described in the previous section and the WQMP rules.

NJDEP's Draft SSA maps reflected the removal of areas subject to pre-existing grant conditions and ESAs described in Section III – Environmental and Other Land Features.

Sewer Service Areas in Environmentally Sensitive Areas

Morris County performed technical corrections to the Draft SSAs provided by NJDEP. In some cases, this involved showing ESAs within the SSA. Such technical corrections generally fell into the following categories:

- Areas that were already sewered.
- Developments had secured permits such as a Treatment Works Approval, or in accordance with Municipal Land Use Law.
- More current site assessment or onsite data (i.e. Habitat Suitability, Letters of Interpretation, Flood Hazard Permit) was made available to the NJDEP.

The WQMP rules allow for inclusion of environmentally sensitive areas under limited conditions. Some of these conditions are described below.

- Where environmentally sensitive areas are bordered on either side by areas with existing sewer service, and where the infill development would generate 8,000 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.

- Where sewer service is necessary to support center based development under an endorsed plan through the State Planning Commission or located within Planning Area 1 as defined in the State Plan Policy Map in the State Development and Redevelopment Plan, provided it would not remove habitat critical to endangered or threatened species. While possible, in Morris County these criteria were not used in this WMP to delineate a SSA.

- 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.

These exceptions are described more fully in N.J.A.C. 7:15-4.4 et seq.

Planning Integration

Highlands Water Protection and Planning Act

The NJDEP enforces compliance with the Highlands Water Protection and Planning Act (Highlands Act) through regulations at N.J.A.C. 7:38. The Highlands Act prohibits SSA extensions in the Preservation Area, with exceptions only for previously approved projects, exempt projects, redevelopment waivers or for the projects eligible for a waiver pursuant to N.J.A.C. 7:38-2.3, 2.4, 2.6, and 3.4. In addition, the Highlands Regional Master Plan (RMP) includes recommendations for different zones where sewer service is or is not appropriate within the Highlands Planning Area. These latter requirements are voluntary for adoption by municipalities that wish to "opt in" for conformance with the RMP.

Thirty-two of the thirty-nine municipalities within Morris County are in the Highlands Region. Thirteen municipalities have areas that are in the Planning Area or Preservation Area and 19 municipalities are solely within the Planning Area. Those municipalities having land within the Preservation Area are required to meet the standards of the Highlands Act for those areas. Lands within the Planning Area are not subject to standards set forth by the Act; however, the RMP sets forth guidance for areas for municipalities that chose to conform to the plan.

Table 4 below lists those municipalities who have elected to conform to the Highlands Regional Master Plan.

Table 4 – Municipalities Intending to Conform

Municipality
Chester Borough
Chester Township
Kinnelon Borough
Randolph Township
Rockaway Township
Washington Township
Wharton Borough

Although Morris County will remain the Wastewater Management Planning entity for the County, individual WMP chapters for conforming municipalities are being developed cooperatively between the Highlands Council and the municipalities. Once these chapters have been completed, they will be incorporated into this WMP. Washington Township's WMP has been completed and was adopted on July 24, 2012. Washington Township is currently its own Wastewater Management Planning Entity (Appendix A).

Delaware River Basin Commission

The Delaware River Basin Commission (DRBC) regulates the discharge of pollutants into, and the withdrawal of water from, the Delaware River Basin; therefore, wastewater and water supply decisions affecting the Delaware River Basin must be coordinated with the Commission. A small portion of the Delaware River Basin exists along the western border of Morris County. It is contained within the boundaries of six Morris County municipalities including Washington Township, Mount Olive Township, Roxbury Township, Mount Arlington Borough, and Jefferson Township, and all of Netcong Borough.

A comment and confer letter was sent to the DRBC offering them the ability to comment on our plan. To date, Morris County has not been contacted by them. Once the plan goes to Public Notice then, they along with other potentially affected entities will have the ability to provide input, if they choose not to do so sooner.

V. Future County Wastewater Demand and Facilities

This chapter describes the build-out methodology used to project future wastewater treatment demand for future SSAs and Non SSAs within the WMP for Morris County.

There are two methods used for projecting future wastewater management needs: a 20-year projection for urbanized municipalities and a build out based on existing zoning for non-urbanized municipalities described below.

Future Wastewater Generation in Sewer Service Areas (Assigned and Unassigned SSAs)

Wastewater Projections in Urbanized Municipalities

The Water Quality Management Planning rules identify urbanized municipalities as those municipalities where 90 percent or more of the total land is considered urban, and also includes municipalities identified as Urban Aid municipalities, Urban Enterprise Zones, Garden State Growth Zones, or Transit Villages. Parks, preserved lands and open space areas have been considered in these urban land calculations. Morris County performed further analysis on municipalities within the County performing technical corrections to the urban land classification. This approach consisted of the following:

- Removed all lands classified as water/wetlands and preserved land from the calculations.
- Reclassified barren or forested land on fully developed parcels, streets, and railroads ROWs as urban. **Table 5** presents the compilation of all urban municipalities based on the subsequent analysis performed by Morris County.

Table 5 – Urban Municipalities

Municipality
Butler Borough
Chatham Borough
Dover Town
East Hanover Township
Madison Borough
Morristown Town
Netcong Borough
Rockaway Borough

Victory Gardens Borough

Future wastewater flows for the listed urbanized municipalities were calculated based on 20-year growth projections.

Table 6 below shows the 20 year wastewater flow projections and method used for each urbanized municipality.

Table 6 - 20 Year Wastewater Flow Projections for Urbanized Municipalities[1]

Urbanized Municipality	20 Year Projected Residential Flow (gpd)	20 Year Projected Non-Residential Flow (gpd)	Projected Total Flow (gpd)
Butler Borough			
Chatham Borough			
Dover Town			
East Hanover Township			
Madison Borough			
Morristown Town			
Netcong Borough			
Rockaway Borough			
Victory Gardens Borough			

[1]Projections will be updated as municipal chapters are updated.

Wastewater Generation Projections in Non-Urban Municipalities

In the remaining municipalities it is anticipated that undeveloped and underdeveloped land will be the predominant factor in determining future wastewater treatment needs.

In designated SSAs, the environmentally sensitive areas were delineated as discussed in Section III and Section IV. In this case, ESA 25 composite areas were removed from the SSAs and placed in the Non Sewer Service Areas (Non SSAs).

In designated SSAs, the environmentally sensitive areas were delineated as discussed in Section III and Section IV. In this case, ESA 25 composite areas were removed from the SSAs. Build-out was completed for Urbanized and Non Urbanized municipalities as described in the narrative below.

Build-out analysis projects what development could occur under existing municipal zoning. The first step in Morris County's (MC) methodology is the identification of lots that are developable. Developable lots are those lots that are vacant (undeveloped) or underdeveloped according to the existing zoning.

MC created a zoning database that contains information on the actual zoning of each lot in the county including minimum lot size, principle permitted uses, building coverage, Floor Area Ratio (FAR), impervious coverage and parking requirements. The zoning database is updated regularly. Not only does this approach meet the requirements of the Water Quality Management Rules, Morris County's methodology provides a more realistic build-out number for each municipality than the composite zoning approach.

MC source for vacant land are the Morris County Real Property Tax Records and Morris County GIS parcel data. All lots with the Property Class Code of "1" (vacant) were downloaded into a list and mapped for review and initial verification by MC staff. The vacant land list and map were then provided to each municipality for verification. Municipalities vetted the data and provided MC with updates and changes.

Once these reviews were completed, the MC build-out model was run using existing zoning on the parcel database. The model would determine the principle permitted use that would generate the most wastewater flow for each lot and zone. The build-out model was run on municipalities outside of the Highlands Region and Highlands Planning Area municipalities that are not conforming to the Highlands Regional Master Plan.

The build-out methodologies below are for non-urbanized municipalities as defined by N.J.A.C. 7:15.

Residential Build-out Methodology (SSA and Non SSA) – Non Urbanized Municipalities

- Build-out parcels: Residentially zoned vacant lots verified by the municipality and underutilized residential parcels (lots twice the minimum lot size or greater).
- Zoning: The build-out model used current zoning and principal permitted uses and determined developable parcels based on minimum lot size; did not incorporate lot geometry and setbacks. Single-family residential lots less than 75% of minimum lot size were deemed to be undersized and not developable[2]. Where identified, adjacent undersized lots were "merged" for the purposes of buildout. Lots would be given a

[2] The 75% threshold was vetted by experienced Professional Planners and municipalities.

"tract" name and identified in the build-out table under the "PIN or Tract Name" column.

- Proposed or Approved Development Applications: If a lot or lots were the subject of a development application, the number of residential units proposed by the developer was manually entered into the model. These developments could also be called out under the "PIN or Tract Name" column.
- Environmental Constraints (ECAs): The model overlaid Steep slopes (>20%), riparian zones and wetlands to identify areas where development is restricted. Single-family residential lots served by individual onsite septic systems must have at least one acre of unconstrained area. Lots zoned for single family residential served by sewer must have 5,000 square feet of unconstrained (buildable) area to be developable.
- General Residential Build-Out Formulas
    - Single-Family Minor Subdivision (existing lot area equal to or greater than 75% [2] of /Minimum Lot Size and less than 4 times Minimum Lot Size): *Existing Lot Area / Minimum Lot Size X number of units per lot*.
    - Single-Family Major Subdivision (existing lot area equal to or greater than 4 times Minimum Lot Size): (*Existing Lot Area X 80%) / Minimum Lot Size X number of units per lot*.[3]
    - Multi-Family Residential: *Existing Lot Area X Gross Density (units/acre)* and/or *Existing Lot Area minus required open space area X Net Density*, whichever is less.

Non-Residential Build-out Methodology (SSA and Non SSA) – Non Urbanized Municipalities

- Build-out parcels: Non-residentially zoned vacant lots verified by the municipality and non-residentially zoned lots with existing residential uses meeting the minimum lot/tract size.
- Zoning: The build-out model used current zoning and principal permitted uses and determined developable parcels based on minimum lot/tract size; did not incorporate lot geometry and setbacks. Where identified, adjacent undersized lots were "merged" for the purposes of buildout. Lots would be given a "tract" name and identified in the build-out table under the "PIN or Tract Name" column.
- Proposed or Approved Development Applications: If a lot or lots were the subject of a development application, the total square footage of non-residential wastewater generating buildings proposed by the developer were manually entered into the model. These developments could also be called out under the "PIN or Tract Name" column.
- Environmental Constraints (ECAs): The model overlaid Steep slopes (>20%), riparian zones and wetlands to identify areas where development is restricted.

[3] 20% of the lot area is removed for road right-of-way and stormwater facilities, based on analysis of existing subdivision plans.

- Note: At this time, it is not possible to determine which lots with existing non-residential development have additional development potential. Municipalities were asked to provide this information, which was then manually entered into build-out. For lots with existing residential structures, it was assumed that the residential structures would be demolished and a nonresidential use would take its place under this build-out scenario.
- General Non-Residential Build-out Formulas (SSA and Non SSA):

  The build-out formulas used for each non-residential zone depends on the density variables given for each zone and, in some cases, for each principal permitted use. For each calculation, the build-out result is expressed in total square feet.

  - Building Coverage Ratio (BCR) Calculation: *(Lot Sq Ft X BCR) X Stories = Build Out*
  - Floor Area Ratio (FAR) Calculation: *Lot Sq Ft X FAR = Build Out*
  - Impervious Coverage Ratio (ICR) Calculation: *Lot Sq Ft * ICR = Buildable Area*
    Parking Lot Sq Ft + Building Footprint Sq Ft = Buildable Area

    *Parking Lot Sq Ft = (Parking Space Sq Ft / Parking Req.) * Bldg Sq Ft*
    Building Footprint Sq Ft = Bldg Sq Ft / Stories

Review and Vetting of Morris County Build-Out Numbers

After Build-Out was run by the GIS program, the results were reviewed and revised, where necessary, by MC staff. After the initial review, build-out tables were provided to municipalities for their review. If the municipalities had any changes or updates, build-out was revised to include the corrected information.

Converting Build-Out For Wastewater (Sewer And Septic) Capacity Analysis

For the Sewer Service Area (SSA), the NJDEP standard calculations are used. SSA capacity analysis is in gallons per day (gpd) or million gallons per day (MGD). The build-out results are converted to gallons to facilitate sewer capacity analysis.

1. For single-family homes, 300 gpd is used to convert units to gallonage. The total number of units is multiplied by 300 gpd.
2. For non-residential development, the conversion factor used is 0.1 gpd. Build-out generates square feet of new/additional development. Total square feet is multiplied by 0.1 to calculate the total new/additional non-residential gallonage.
3. Items 1 & 2 are added together to calculate the total amount of additional build-out gallonage required for the SSA. This number is presented in the municipal chapter as well as the facility table for each sewage treatment plant (STP).

For the Non SSA, the NJDEP standard calculations are used. In order to perform the Non SSA capacity analysis, build-out is reported in the number of dwelling units for both

residential and non-residential. The nitrate dilution model (NDM) reports equivalent dwelling units (EDUs) for the purposes of the capacity analysis.

1. MC build-out for residential areas generates the total number of dwelling units by HUC11. No conversion is necessary for the nitrate dilution model capacity analysis.
2. Non-residential build-out is converted from square feet to EDU's with the following formula: (Square Feet * 0.125)/ 500 gpd = EDU's) for Non SSA on a HUC11 basis.
3. Items 1 & 2 are added together to calculate the total number of EDU's and compare to the NDM results. Results are on a HUC11 area and presented in the municipal WMP chapter and county-wide summary document.

Urbanized Municipality Build-Out

For each municipality that meets the new definition of urban, a population projection was utilized to generate the additional number of gallonage that would be generated in a specific municipality. Additional population projections could have come from the NJTPA, Census or the municipality, it varied depending on the municipality. In some instances, nonresidential redevelopment was also projected to occur. This type of information came directly from the municipality.

Urbanized municipalities in Morris County did not project growth in the Non SSA as they do not expect there to be growth in those areas. To the extent there would be growth in the Non SSA it would look to connect to sewer as this area was probably in the SSA previously but was removed due to ECAs. For conversion from people to gallons standard NJDEP calculations were used. (300 for single family home, 0.1 gpd for nonres, 75 gpd per person)

Zoning maps are included for each individual municipality, as Map 4M. The generalized county wide zoning map (Map 4) is part of this county-wide summary. The projected wastewater data is shown by wastewater treatment plant in **Table 7** in the following section for comparison to the existing permitted capacity of each facility. Build-out results are also found in Table 2a located in each individual municipal chapter.

Septic System Development within Sewer Service Areas

For purposes of this WMP, all septic systems within a SSA are assumed to eventually be connecting to its appropriate facility. Future flows attributed to these existing septic systems are accounted for in each municipal chapter, as well as the appropriate Facility Table found in Appendix C. Flow at each facility has been accounted for these existing septic systems and can be found in Table 2a in each municipal chapter.

Future Wastewater Generation in Non SSAs

Wastewater Generation Projections in Urban Municipalities

For the purpose of this WMP, Non SSAs have not been evaluated for urbanized municipalities. This evaluation will be updated as individual municipal chapters are included into the Morris County WMP when they are adopted.

Wastewater Generation Projections in Non-Urbanized Municipalities

In designated Non SSAs, the existing zoning was applied to the developable vacant and sub-dividable lots within the Non SSA to project a build-out condition for use in estimating the future wastewater demand for each Non SSA. The non-residential build-out data was then converted to a projected future wastewater flow by applying the planning flow criteria from N.J.A.C. 7:9A-7.4 based on the type of development projected.

For non-residential land uses the anticipated floor area was multiplied by 0.125 gallon per day per square foot to predict future wastewater generation. Residential units were then added to these equivalent dwelling units (EDUs). The projected wastewater data, expressed as equivalent dwelling units, is shown by HUC11 on Table 3 of the applicable municipal chapter.

Nitrate Dilution Analysis

In areas that are not designated as SSAs, the default wastewater management alternative to support development is a Non SSA, and is defined as discharge to groundwater equal to or less than 2,000 gallons per day. The nitrate dilution analysis for septic systems was performed for Non SSAs county-wide in similar fashion to that conducted for SSAs. 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. So, these areas were used when analyzing 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 2 ppm 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 (NO_3^-) 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 (a Recharge-Based Nitrate-Dilution Model for New Jersey, http://www.nj.gov/dep/wqmp/guidance.html). The County ran the analysis using annual average recharge. The WMP for Morris County recognizes that in the Highlands Preservation Area the NJDEP's Highlands rules at N.J.A.C. 7:38 will apply, using a much more stringent nitrate target.

VI. Wastewater Capacity Analysis

The next step in the wastewater management planning process is to assess whether there is sufficient wastewater treatment capacity to meet the needs of the County based on the projections described above. For SSAs this requires the aggregation of municipal wastewater generation projections by sewage treatment plant to the existing permitted capacity of each facility. In Non SSAs, the default wastewater management alternative is discharge to groundwater equal to or less than 2,000 gallons per day, commonly referred to as septic systems. The assessment of water quality impacts from development on septic systems relies on nitrate concentration as determined by the nitrate dilution analysis.

Sewer Service Area Wastewater Treatment Capacity Analysis

For the Sewer Service Areas, this analysis required the aggregation of municipal wastewater projections by sewage treatment plant and a comparison of the projected future demand to the existing permitted capacity of the sewage treatment plant. This was done by delineating SSA and determining build-out in each SSA as described in the previous sections of this WMP.

Existing SSAs served by these wastewater facilities are shown on a county-wide basis on Map 2 and on a municipal basis on Map 2M found in each individual municipal chapter. Future SSAs proposed for each wastewater facility are shown on a county-wide basis on Map 3 and on a municipal basis on Map 3M found in each individual municipal chapter.

Table 7 – Sewer Service Area Evaluation by Facility and Municipality is a summary of committed, anticipated future flows, and permitted or allocated wastewater flows by sewage treatment facility, with a subsequent breakdown by municipality. Additional details are included within the municipal chapters that are presented in Volume II and in the facility tables located in Appendix C.

Table 7 – Sewer Service Area Evaluation by Facility and Municipality

Facility	NJPDES Permit	Permitted Capacity (MGD)	Facility Type (DGW/ DSW)	Municipality	Committed Flow (MGD) [existing flow & TWA]	Build-out or 20 Year Projected Flow (MGD)	Permitted / Allocated Flow (MGD)
Greystone Park Psych. Hospital STP	NJ0026689	0.4	DSW	**Facility Totals**			
				Parsippany-Troy Hills Township			0.400
Hanover Sewerage Authority STP	NJ0024902	4.61	DSW	**Facility Totals**			
				East Hanover Township			
				Hanover Township			
				Parsippany-Troy Hills Township			0.041
				Morris Plains Borough			
				Morris Township			
Hackettstown Municipal Utilities Authority WPCP	NJ0021369	3.3	DSW	**Facility Totals**			
				Mount Olive Township			
				Washington Township			
Molitor WPCF (Madison-Chatham Joint Meeting)	NJ0024937	3.5	DSW	**Facility Totals**			
				Chatham Borough			(1)
				Chatham Township	0.007	0.010	(1)
				Madison Borough			(1)
Morristown Sewer Utility STP	NJ0025496	4.8	DSW	**Facility Totals**			
				Hanover Township			

Facility	NJPDES Permit	Permitted Capacity (MGD)	Facility Type (DGW/ DSW)	Municipality	Committed Flow (MGD) [existing flow & TWA]	Build-out or 20 Year Projected Flow (MGD)	Permitted / Allocated Flow (MGD)
				Morris Township			
				Morristown Town			
Morris-Butterworth STP	NJ0024911	3.3	DSW	**Facility Totals**			
				Morris Township			
				Morris Plains			
				Parsippany-Troy Hills			(1)
				Randolph Township			
Morris-Woodland STP	NJ0024929	2	DSW	**Facility Totals**			
				Morris Township			
				Morristown Town			
				Harding Township			
				Florham Park Borough			
				Madison Borough			
Musconetcong Sewerage Authority Sewage STP	NJ0027821	5.79	DSW	**Facility Totals**			
				Mount Arlington Borough			
				Mount Olive Township			
				Netcong Borough			
				Roxbury Township			
				Jefferson Township	0	0.822	0.860
Parsippany-Troy Hills WTP	NJ0024970	16	DSW	**Facility Totals**			
				Denville Township			
				East Hanover Township			
				Montville Township			

Facility	NJPDES Permit	Permitted Capacity (MGD)	Facility Type (DGW/ DSW)	Municipality	Committed Flow (MGD) [existing flow & TWA]	Build-out or 20 Year Projected Flow (MGD)	Permitted / Allocated Flow (MGD)
				Mountain Lakes Borough			
				Parsippany-Troy Hills Township			(1)
Rockaway Valley Regional Sewerage Authority STP	NJ0022349	12	DSW	**Facility Totals**			
				Boonton Town			
				Boonton Township			
				Denville Township			
				Dover Town			
				Mine Hill Township	0.141	0.406	0.131042
				Parsippany-Troy Hills Township			(1)
				Randolph Township			
				Rockaway Borough			
				Rockaway Township			
				Rockaway Township – Picatinny Arsenal			
				Victory Gardens Borough			
				Wharton Borough			
Two Bridges Sewerage Authority WWTP	NJ0029386	7.5	DSW	**Facility Totals**			
				Butler Borough			
				Kinnelon Borough			
				Lincoln Park Borough			

Facility	NJPDES Permit	Permitted Capacity (MGD)	Facility Type (DGW/ DSW)	Municipality	Committed Flow (MGD) [existing flow & TWA]	Build-out or 20 Year Projected Flow (MGD)	Permitted / Allocated Flow (MGD)
				Pequannock Township			
				Riverdale Borough			
Ajax Terrace Water Pollution Control Plant	NJ0022675	2	DSW	Roxbury Township			
Chatham Township Water Pollution Control Plant #1 (Chatham Main) [2]	NJ0020290	1	DSW	Chatham Township	0.811	0.99	1.155
Chester Borough WWTP	NJ0054101	0.075	DGW	Chester Borough			
Clover Hill STP	NJ0021954	0.5	DSW	Mount Olive Township			
Long Hill Township STP	NJ0024465	1.25	DSW	Long Hill Township			
Mendham Borough STP	NJ0021334	0.45	DSW	Mendham Borough			
Mount Olive Villages STP	NJ0099538	0.33	DGW	Mount Olive Township			
United Water Mid-Atlantic STP	NJ0065226	0.158	DGW	Mount Arlington Borough			
White Rock Lake STP[3]	NJ0026867	0.13	DSW	Jefferson Township	0.081	.1257	.1295
Hercules Company WPCP	NJ0000876	0.25	DSW	Roxbury Township			
Unassigned SSA [4]	NA		NA	Mine Hill Township	0	0.217	NA

[1] Facility has no allocation for this municipality.

[2] The Chatham Township WPCP #1 (Chatham Main (NJPDES NJ0020290)) facility includes Chatham Township WPCP #2 flows (Chatham Glen Facility (NJPDES NJ0052256)). These facilities are being combined into one SSA.

[3] The White Rock Lake STP (NJ0026867) includes the Moosepac/Water's Edge STP flows (NJ0081086). These facilities are being combined into one SSA.

[4] This area is entirely within Mine Hill Township. The Township is looking to connect this area to a regional STP or new DSW or DGW STP.

Note: This table will be updated as individual municipal chapters are adopted.

Discussion of Sewer Service Area Wastewater Capacity Analysis

Table 8 shows the following facilities have a calculated deficiency in wastewater treatment capacity based on build-out estimates and their NJDPES permit flow value or municipal allocation. All facilities listed are publicly owned treatment works (POTWs). Allocation identified in this document are neither NJDEP-determined nor NJDEP-enforced. The NJDEP does not establish these allocations and is not involved in any agreements to set them.

Table 8 – Facilities and Municipalities Subject to Further Review

Facility	**NJPDES Permit**	**Municipality (ies)**	**Total Projected Flow (MGD)**	**Deficit(1) (MGD)**
RVRSA STP	NJ0022349	Mine Hill	0.406	**TBD (2)** *0.275*
Unassigned	NA	Mine Hill	0.217	**0.217**

1. Values in bold denote a deficiency with the facility's NJPDES permitted capacity. Values in italics denote a deficiency in the municipal allocation.

2. See Appendix C for further analysis.

Mine Hill Township has been actively negotiating with RVRSA to acquire additional allocation from the STP. It is expected that Mine Hill will seek to obtain additional gallonage from RVRSA to address the sewer capacity deficit of the allocated flow.

For unassigned sewer service areas, the entire wastewater demand constitutes a potential capacity deficiency. Mine Hill will continue to investigate connecting to a regional STP or build a new DSW or DGW wastewater treatment facility to address this deficit.

Non Sewer Service Area Evaluation [Formally General Service Area]

Using a nitrate dilution analysis, Total Systems Allowed (Nitrate Dilution) was calculated for each HUC 11 and municipality with a target of 2 ppm nitrate concentration and based on the overall dilution available in the watershed. Only non-hydric soil types were considered in this analysis.

For comparison purposes, Total Systems Allowed (Zoning) was also calculated for these same areas. It is based on the potential wastewater flow in the Non SSAs expressed as the number of ISSDSs in residential areas or equivalent dwelling units for non-residential zones.

Table 9 compares the allowable units within each HUC 11 and 14 on a municipal basis and a HUC basis to the number of units that could be built under the existing zoning within that watershed. The zoning within the Non SSA for discharges to ground water equal to or less than 2,000 gallons per day (i.e., septic systems or individual subsurface sewage disposal systems, ISSDS) for the municipality was compared to the allowable densities as determined through nitrate dilution analysis. For the purposes of this analysis it is inconsequential if one municipality's zoning exceeds its allocation provided that the HUC 11 or 14 does not exceed the total sustainable development. However the NJDEP may require additional strategies to address these "exceedances" as such the municipality will work with the NJDEP on appropriate strategies to address this. Specifics will be included in the appropriate municipal chapter. For examples of these strategies see the NJDEP's New Jersey's Continuing Planning Process Document (http://www.nj.gov/dep/wrm/docs/cpp.pdf). Where a municipal chapter does not exist, the WMP for Morris County removes that municipality's land area from the analysis. This evaluation will be updated as individual municipal chapters are included into the Morris County WMP when they are adopted.

Existing Non SSAs are shown on a county-wide basis on Map 2 and on a municipal basis on Map 2M found in each individual municipal chapter. Future Non SSAs are shown on a county-wide basis on Map 3 and on a municipal basis on Map 3M found in each individual municipal chapter. The delineation of Non SSAs include any area that are not specified as a SSA (Assigned or Unassigned).

Table 9 – Non Sewer Service Area Evaluation by HUC11, HUC14 and Municipality [2]

HUC 11	HUC 14	Municipality [1]	Municipal Nitrate Dilution by HUC14	Total Nitrate Dilution by HUC14	Municipal Build-out by HUC 14 (Equivalent Homes)	Total Build-out by HUC 14 (Equivalent Homes)	Municipal Surplus / Deficit by HUC 14 (Equivalent Homes)	Total Surplus / Deficit by HUC 14 (Equivalent Homes)
02030103010	02030103010010	Harding Township						
		Mendham Borough						
		Mendham Township						
	02030103010020	Harding Township						
	02030103010030	Harding Township						
	02030103010040	Chatham Township	52.92		10.00		42.92	
		Harding Township						
	02030103010050	Harding Township						
	02030103010060	Chatham Township	84.74		84.00		0.74	
		Harding Township						
	02030103010070	Harding Township						
	02030103010120	Chatham Township	2.83		0.00		2.83	
	02030103010130	Chatham Township	12.28		9.00		3.28	
	02030103010150	Chatham Township	0.00		0.00		0.00	0.00
	Total Surplus / Deficit by HUC 11(Equivalent Homes)							**49.77**
02030103020	02030103020010	Mendham Township						
		Randolph Township						
	02030103020020	Harding Township						
		Mendham Township						
	02030103020030	Denville Township						
		Morris Plains Borough						
		Parsippany-Troy Hills						

HUC 11	HUC 14	Municipality [1]	Municipal Nitrate Dilution by HUC14	Total Nitrate Dilution by HUC14	Municipal Build-out by HUC 14 (Equivalent Homes)	Total Build-out by HUC 14 (Equivalent Homes)	Municipal Surplus / Deficit by HUC 14 (Equivalent Homes)	Total Surplus / Deficit by HUC 14 (Equivalent Homes)
	02030103020040	Mendham Township						
		Morris Plains Borough						
		Parsippany-Troy Hills						
		Randolph Township						
	02030103020050	Hanover Township						
	02030103020060	Hanover Township						
		Parsippany-Troy Hills						
	02030103020070	Hanover Township						
	02030103020080	Denville Township						
		Mountain Lakes Borough						
		Parsippany-Troy Hills						
	02030103020090	Hanover Township						
		Parsippany-Troy Hills						
	02030103020100	Hanover Township						
		Parsippany-Troy Hills						
	Total Surplus / Deficit by HUC 11(Equivalent Homes)							
02030103030	02030103030030	Rockaway Township						
	02030103030040	Jefferson Township	24.15		3.00		21.15	21.15
		Roxbury Township						
	02030103030060	Rockaway Township						
		Jefferson Township	18.36		0		18.36	18.36
	02030103030070	Mine Hill Township	65		53		12	12.04
		Randolph Township						
		Jefferson Township	0.04		0		0.04	

HUC 11	HUC 14	Municipality [1]	Municipal Nitrate Dilution by HUC14	Total Nitrate Dilution by HUC14	Municipal Build-out by HUC 14 (Equivalent Homes)	Total Build-out by HUC 14 (Equivalent Homes)	Municipal Surplus / Deficit by HUC 14 (Equivalent Homes)	Total Surplus / Deficit by HUC 14 (Equivalent Homes)
		Rockaway Township						
		Roxbury Township						
		Wharton Borough						
	02030103030080	Denville Township						
		Randolph Township						
	02030103030090	Denville Township						
		Randolph Township						
		Rockaway Township						
	02030103030110	Denville Township						
		Rockaway Township						
	02030103030120	Denville Township						
		Mountain Lakes Borough						
		Parsippany-Troy Hills			0			
		Randolph Township						
	02030103030130	Boonton Township						
		Montville Township						
		Rockaway Township						
	02030103030140	Boonton Township						
		Denville Township						
		Mountain Lakes Borough						
	02030103030150	Boonton Township						
		Mountain Lakes Borough						
		Parsippany-Troy Hills			0			
	02030103030160	Boonton Township						

HUC 11	HUC 14	Municipality [1]	Municipal Nitrate Dilution by HUC14	Total Nitrate Dilution by HUC14	Municipal Build-out by HUC 14 (Equivalent Homes)	Total Build-out by HUC 14 (Equivalent Homes)	Municipal Surplus / Deficit by HUC 14 (Equivalent Homes)	Total Surplus / Deficit by HUC 14 (Equivalent Homes)
		Montville Township						
	02030103030170	Montville Township						
		Parsippany-Troy Hills						
	Total Surplus / Deficit by HUC 11(Equivalent Homes)							**51.52**
02030103040	02030103040010	Lincoln Park Borough						
		Montville Township						
	Total Surplus / Deficit by HUC 11(Equivalent Homes)							
02030103050	02030103050080	Butler Borough						
		Kinnelon Borough						
		Pequannock Township						
		Riverdale Borough						
	Total Surplus / Deficit by HUC 11(Equivalent Homes)							
02030103100	02030103100070	Pequannock Township						
	Total Surplus / Deficit by HUC 11(Equivalent Homes)							
02030103110	02030103110010	Kinnelon Borough						
		Lincoln Park Borough						
		Montville Township						
		Pequannock Township						
	02030103110020	Lincoln Park Borough						
		Pequannock Township						
	Total Surplus / Deficit by HUC 11(Equivalent Homes)							
02030105010	02030105010010	Mt Arlington Borough						
		Roxbury Township						

HUC 11	HUC 14	Municipality [1]	Municipal Nitrate Dilution by HUC14	Total Nitrate Dilution by HUC14	Municipal Build-out by HUC 14 (Equivalent Homes)	Total Build-out by HUC 14 (Equivalent Homes)	Municipal Surplus / Deficit by HUC 14 (Equivalent Homes)	Total Surplus / Deficit by HUC 14 (Equivalent Homes)
	02030105010020	Mt Olive Township						
		Roxbury Township						
		Washington Township						
	02030105010030	Mt Olive Township						
	02030105010040	Washington Township						
	02030105010050	Washington Township						
	02030105010060	Washington Township						
	Total Surplus / Deficit by HUC 11(Equivalent Homes)							
02030105020	02030105020010	Washington Township						
02030105050	02030105050010	Mine Hill Township	60		67		-7	-7
		Mt Arlington Borough						
		Randolph Township						
		Roxbury Township						
	02030105050020	Randolph Township						
		Roxbury Township						
	02030105050030	Chester Borough						
		Washington Township						
	02030105050040	Washington Township						
	02030105050080	Washington Township						
	02030105050130	Washington Township						
		Chester Township						
	Total Surplus / Deficit by HUC 11(Equivalent Homes)							**-7**
02030105060	02030105060010	Mendham Borough						
		Mendham Township						

HUC 11	HUC 14	Municipality [1]	Municipal Nitrate Dilution by HUC14	Total Nitrate Dilution by HUC14	Municipal Build-out by HUC 14 (Equivalent Homes)	Total Build-out by HUC 14 (Equivalent Homes)	Municipal Surplus / Deficit by HUC 14 (Equivalent Homes)	Total Surplus / Deficit by HUC 14 (Equivalent Homes)
		Randolph Township						
	02030105060020	Chester Borough						
		Chester Township						
		Mendham Township						
		Randolph Township						
	02030105060030	Chester Township						
		Mendham Borough						
		Mendham Township						
	02030105060040	Mendham Township						
	02030105060050	Chester Borough						
		Mendham Township						
	Total Surplus / Deficit by HUC 11(Equivalent Homes)							
02030105150	02040105150020	Jefferson Township	31.99		11.80		20.19	
		Mt Arlington Borough						
		Roxbury Township						
	02040105150030	Mt Olive Township						
		Roxbury Township						
	02040105150070	Mt Olive Township						
	02040105150080	Mt Olive Township						
	02040105150090	Washington Township						
	02040105150100	Washington Township						
	Total Surplus / Deficit by HUC 11(Equivalent Homes)							**20.19**
02030105160	02040105160010	Washington Township						
	02040105160020	Washington Township						

HUC 11	HUC 14	Municipality [1]	Municipal Nitrate Dilution by HUC14	Total Nitrate Dilution by HUC14	Municipal Build-out by HUC 14 (Equivalent Homes)	Total Build-out by HUC 14 (Equivalent Homes)	Municipal Surplus / Deficit by HUC 14 (Equivalent Homes)	Total Surplus / Deficit by HUC 14 (Equivalent Homes)
	Total Surplus / Deficit by HUC 11(Equivalent Homes)							

[1] The following municipalities have conformed to the Highlands Regional Master Plan for the planning area and build-out will be provided by the Highlands Council; Chester Borough, Chester Township, Kinnelon Borough, Randolph Township, Rockaway Township, Washington Township, and Wharton Borough. Conforming municipalities are analyzed on a HUC14 basis.

[2] Values will be updated as each municipal chapter is updated. Surpluses and deficits will change as each municipal chapter is updated. Non-conforming and non-Highlands municipalities are analyzed on a HUC11 basis.

Discussion of Non Sewer Service Area Results

The Non SSA Capacity Analysis will remain incomplete for those HUC11s which include municipalities which have filed a petition to conform to the Highlands RMP. The results for these HUCs will be finalized once applicable data has been supplied by the Highlands Council.

Table 10 – HUCs Subject to Further Review

Municipality	HUC11	Build-out Potential (Equivalent Dwelling		Deficit
		Using Nitrate Dilution Model	Under Municipal Zoning	
Mine Hill	02030105050	60	67	-7

See Individual municipal chapters for further discussion on deficits.

Compliance with Environmental Protection Standards

One important purpose of the WMP is to help ensure that proposed wastewater service areas are properly located to minimize primary and secondary environmental impacts. Where wastewater thresholds are exceeded, for either the SSA or Non SSA the impact must be discussed and analyzed. The methodology used for this discussion will come from the NJDEP's CPP document and coordinated with the appropriate municipality's and/or local or regional STP/WTPs. This plan has demonstrated compliance with these capacity constraints.

Environmental Protection Ordinances

Table 11 addresses the status of requirements for municipal ordinances regarding the protection of steep slopes, riparian zones and the maintenance of septic systems as addressed in the municipal chapters. As of November 7, 2016, the only required plan is septic maintenance. Previously adopted ordinances are left here to show compliance with the previous WQMP rules.

Table 11 - Status of Municipal Ordinances and Master Plan

Municipality	**Zoning Ordinance**[1]	**Stormwater Ordinance** [1]	**Riparian Zone Ordinance** [1]	**Steep Slope Ordinance** [1]	**Septic System Maintenance**[1]
Chatham Township[2]	NA	6/25/2006	6/25/2009	7/18/13	12/8/09
Jefferson Township[2]	NA	3/1/2006	7/16/2014	7/16/14	7/16/14
Mine Hill Township	NA	NA	NA	NA	NA

Note: This table will be updated as individual municipal chapters are adopted.

[1] The current WQMP rules do not require municipalities to adopt these ordinances.

[2] These Chapters were adopted under previous WQMP rules which required all four ordinances.

Appendices

Appendix A – Alternative Assignment of WMP Responsibility

Documentation of any alternative assignments of WMP responsibility is included in this Appendix, based on the following listing:

Table A1 - Alternative Assignment of WMP Responsibility		
Municipality	**Assigned To**	**Assignment Date**
Washington Township	Washington Township	February 1, 2012

Appendix B – USEPA Section 201 Map Revisions or Grant Waivers

Grant Waivers are required for the following facilities in Morris County:

- Denville Township
- East Hanover Township
- Florham Park Sewerage Utility
- Musconetcong Sewerage Authority
- Pequannock River Basin Regional Sewerage Authority
- Rockaway Valley Regional Sewerage Authority (Grant conditions are wetlands, prime agricultural land and floodplains [special flood hazard area/100 year flood zone])

This list is available at https://www.epa.gov/npdes-permits/environmentally-sensitive-area-esa-grant-condition-waiver-program-region-2#grantees

Appendix C – 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 ground water facilities discharging greater than 2,000 gallons per day (i.e., requiring NJPDES permits) are listed below, based on whether they are domestic or industrial wastewater treatment facilities, and whether they have service areas that affect more than one municipality.

Facility Tables for each of the municipalities is as follows:

- → Chatham Township facilities tables are shown in tables C1405-1 through C1405-6
- → Jefferson Township facilities tables are shown in tables C1414-1 through C1414-32
- → Mine Hill Township facilities tables are shown in tables C1420-1 through C1420-4

Glossary and Definitions

- 20-year projected flows – are the projected wastewater flows in an urban municipality based on the 20-year estimated population growth or the maximum additional residential units expected in the municipality, whatever is larger. This is the maximum flow that the sewer service area is expected to produce without expanding in size.

- Actual flow – is the volume of sewage and other wastes currently being conveyed to and treated by a centralized treatment facility in a given amount of time.

- Aggregate - is a collection of information or values that are combined together to form a total quantity.

- Allocated flow – is the agreed upon wastewater flow between two parties, typically between a treatment facility and a municipality. The allocated flow is only a portion of the overall permitted flow for the centralized wastewater treatment facility.

- Assigned Sewer Service Area – is a sewer service area that is designated to go a specific sewage treatment plant/wastewater treatment plant.

- Available land – includes both undeveloped and underdeveloped parcels as defined below.

- Build-out – is the estimated fully developed condition when all undeveloped and underdeveloped lots have been developed to their full potential based on existing zoning.

- Build-out flows – are the projected wastewater flows based on the sewer service area being fully developed or in build-out conditions. This is the maximum flow that a sewer service area is expected to produce without expanding in size.

- Category one waters - are defined as waters protected from any measurable changes in water quality because of their exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resources as defined in the existing Surface Water Quality Standards rules at N.J.A.C. 7:9B-1.4.

- Centralized sewer service – is also know as a sewer service area or SSA and represents the area to be served by a centralized wastewater treatment facility.

- Combined sewer system – is a sewer system that is designed to carry sanitary sewage at all times and that also is designed to collect and transport stormwater from streets and other sources, thus serving a combined purpose.

- Committed flow – is the sum of the actual flow plus the sum of all flows which are anticipated from connections which have been approved but are not yet in operation.

- Contiguous – is a continuous mass, or a series of things in contact or proximity with each other.

- Constraint – is a limitation or restriction.

- Development – is the division of a parcel of land into two or more parcels, the construction, reconstruction, conversion, structural alteration, relocation or enlargement of any building or other structure, or of any mining, landfill, excavation, roads, sewers and other infrastructure and any use or change in the use of any building or other structure, or land or extension of use of land.

- DGW – Discharge to Groundwater

- DMR – Discharge Monitoring Report

- DSW – Discharge to Surface Water

- EDUs – Equivalent Dwelling Units - a measure where one unit is equivalent to wastewater effluent from one dwelling unit. NJDEP defines a dwelling unit to mean any building or portion of a building, permanent or temporary, used or proposed to be used as a residence either seasonally or throughout the year. Most often, EDU is used in reference to a single family home.

- Facility table – is a table summarizing all wastewater flows for of a centralized wastewater treatment facility and its associated sewer service area. This table includes the aggregation of all municipal flows segregated by each treatment facility.

- gpd – gallons per day, a unit of flow measurement.

- GSA – General Service Area – represents the area to be served by residential septic systems. NJDEP refers to septic systems as discharges to groundwater with a design capacity of equal to or less than 2,000 gallons per day.

- GW – groundwater

- Highlands Council – is the Highlands Water Protection and Planning Council established pursuant to NJSA 13:20-4.

- Highlands planning area – is that portion of the Highlands Region not included within the Highlands Preservation Area, pursuant to N.J. S.A. 13:20-7(c).

- Highlands preservation area – is that portion of the Highlands Region so designated by N.J.S.A 13:20-7(b).

- Highlands Region – is that region so designated by N.J.S.A. 13:20-7.

- HUC11 - Hydrologic Unit Code consisting of 11 digits – a United States Geological Survey (USGS) standard designation for subwatersheds delineated based on topography.

- HUC14 – Hydrologic Unit Code consisting of 14 digits – a USGS standard designation for subwatersheds delineated based on topography.

- Individual Subsurface Disposal System (ISSDS) – means a system for the disposal of sanitary sewage into the ground, which is designed and constructed to treat sanitary sewage in a manner that will retain most of the settleable solids in a septic tank and discharge the liquid effluent to a disposal field

- MGD – million gallons per day, a unit of flow measurement.

- MCP&P – Morris County Office of Planning and Preservation– is the county agency in charge of preparation and maintenance of the Wastewater Management Plan.

- Morris County Board of Chosen Freeholders – is a seven-member Board governing Morris County. The Freeholder Board sets policies for the operation of six super-departments, more than 30 divisions plus authorities, commissions, boards and study committees. The Board of Chosen Freeholders has been granted broad powers by the state legislature to regulate county property, finances and affairs.

- Natural Heritage Priority Sites Coverage – was created to identify critically important areas to conserve New Jersey's biological diversity, with particular emphasis on rare plant species and ecological communities.

- NDM - Nitrate Dilution Model – The NDM is required by NJDEP and follows the calculations methodology developed by the New Jersey Geological Service. The NDM uses the soils type to estimate the minimum lot size 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 ground water quality. The NDM uses the minimum lot size to calculate the number of EDUs possible for a given area.

- N.J.A.C. – New Jersey Administrative Code

- NJGS - New Jersey Geological and Water Survey

- NJDEP – New Jersey Department of Environmental Protection

- NJPDES – New Jersey Pollutant Discharge Elimination System

- Non Sewer Service Area (Non SSA) formally called General Service Area (GSA) – See GSA

- Non-Urban Municipality - any municipality that is not classified as urban. Build-out has been generated for these municipalities.

- Permitted flow – is the maximum allowable flow for a specific treatment works as stated in the facility's NJPDES permit or TWA, whichever is less.

- PPM – Parts per Million

- POTW – Publicly Owned Treatment Works

- Riparian zone – is the land and vegetation within and directly adjacent to all surface waters including, but not limited to, lakes, ponds, reservoirs, perennial and intermittent streams.

- RMP – Regional Master Plan

- SSA – Sewer Service Area – represents the area to be served by a centralized treatment facility.

- STP – Sewage Treatment Plant; see also WPCF, WPCP, and WWTP.

- SW – surface water

- Threatened and Endangered Species Habitat –areas depict by NJDEP's Landscape Project Rank 3, 4, 5 delineating areas used by or necessary for endangered and threatened species and other priority wildlife to sustain themselves successfully.

- Treatment Works Approval (TWA) – means an approval issued pursuant to N.J.S.A. 58:10A-6b and N.J.A.C. 7:14A.

- Unassigned Sewer Service Area (Unassigned SSA) – is a sewer service area that is designated to be served by a sewage treatment plant/wastewater treatment plant. However, it has not been designated which STP it will be served by. It is possible that a new STP will be built and permitted to accommodate this flow.

- Undeveloped parcels - are those parcels 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 parcels where some level of development exists, but at a density less than allowed by zoning and where deed restrictions do not prevent further wastewater generating development.

- Urban Municipality – means those where 90% of the municipality's developable land area appears as "Urban Lands" as designated by the most recent NJDEP Land Use/Land Cover GIS database and amended and updated to reflect current conditions at the time of the analysis.

- Vacant Land – is a parcel of land without any building, structure or improvement, including impervious surfaces, but does not include recreation, green or open space created during development.

- Wastewater deficit – is when the projected build-out flow for a SSA or Non SSA would produce more wastewater than allowed by the

allocation or nitrate dilution model.

- Wastewater Service Area - A sewer service area (assigned or unassigned) or a non sewer service area approved for wastewater facilities. SSAs can discharge to either SW or GW, with non sewer service areas only discharging to groundwater with planning flows equal to or less than 2,000 gallons per day (gpd).
- Wastewater surplus – is when the allocation or nitrate dilution model flow is greater than the projected build-out flows allowing the SSA or Non SSA to fully develop with excess capacity.
- WQMP – Wastewater Quality Management Plan
- WMP – Wastewater Management Plan
- WPCF – Water Pollution Control Facility
- WPCP – Water Pollution Control Plant
- WWTP or WTP – Wastewater Treatment Plant

Township of Mine Hill (1420)

Introduction

This municipal chapter is an element of the Morris County Wastewater Management Plan prepared by the Morris County Office of Planning and Preservation in accordance with N.J.A.C. 7:15.

As its name implies, Mine Hill was a center of iron ore extraction. The Township was home to Mahlon Dickerson, the first New Jersey governor from Morris County, and his namesake, the Dickerson Mine, the oldest iron ore mine in the United States. Located along Route 46, this municipality contains small residential neighborhoods as well as commercial and industrial areas.

The Township of Mine Hill is located in the central portion of Morris County and encompasses approximately 3.0 square miles. Approximately 30% of the Township consists of parks and recreation areas. The remaining land within the Township consists mainly of residential uses with commercial uses found along Route 46 and in pockets located in the northwestern and southeastern corners of the Township. The Township zoning designations are shown on Map 4M.

The Census Bureau estimates Township of Mine Hill had a population of 3,531 in 2018. The population has seen a slight decline of 3.3% since 2010.

Following are some important considerations for this municipality with respect to wastewater management planning:

- The Township of Mine Hill is considered a non-urban municipality.
- The entire municipality is located within the New Jersey Highlands (Highlands) Planning Area (see Map 1M).

Existing Infrastructure

No major permitted wastewater treatment facilities, which discharge, to surface water are located within the municipality. All wastewater generated within the Township of Mine Hill is treated by the Rockaway Valley Regional Sewerage Authority (RVRSA) STP. Tables 1a and 1b include additional minor permitted facilities that discharge to groundwater in the Township of Mine Hill regulated through NJDEP that have individual New Jersey Pollutant Discharge Elimination System (NJPDES) discharge permits. Table 1a shows facilities which are indicated as discharge to groundwater (DGW). There are no minor facilities indicated as discharge to surface water (DSW) in the municipality. However, Table numbered 1b is reserved for such facilities if they are noted in the future.

The existing treatment facilities, including minor facilities, are illustrated on Map 2M.

Table 1a: Additional NJPDES (DGW) Minor Permit Facilities within the Township of Mine Hill that Discharge greater than 2,000 gpd

NJPDES Permit Number	Facility Name	Permit Program Code	Receiving Stream or Aquifer	Classification	Permittee	Contact Organization Name	Block	Lot	Permitted Flow (gpd)	Existing Flow[1] (gpd)	Future Flow[1] (gpd)	Discharge Category
NJG0173681	*Cinders Restaurant*	T1			John Freda	John Freda	401	1		existing 224 seat restaurant		Sanitary
NJG0183814	*Ferromonte Plaza*	T1			MHM Route 46 LLC	MHM Route 46 LLC	807 808	1 2,9		16,000 sq feet		Sanitary
NJG0259314	*Multi-Use Building*	T1			Salvatore Mileli	Salvatore Mileli	1302	6		4 -1 bedroom 2- 2 bedroom Nail Salon 2,903 sq feet 2,017 sq feet office		Sanitary

[1]Flow indicated is daily maximum flow
Facility Names in *italics* are T1's.

Environmental and Other Land Features

County-wide environmental features are shown on maps 5A & 5B.

The Township of Mine Hill is located adjacent to the Town of Dover, Randolph Township, the Borough of Wharton and Roxbury Township. Route 46 provides primary access and runs through the center of the Township. Mine Hill also contains large open space and recreational areas such as Hedden Park and Mine Hill Lake. There are several water bodies throughout the Township. Mine Hill Lake is located in the southwestern corner of the Township. Jackson Brook and its associated wetlands and tributaries are located along the eastern border of the Township. Spring Brook, with its associated tributaries and wetlands are located along the northern border of the Township. Jackson Brook joins with Spring Brook just northeast of the northeastern corner of the Township where Spring Brook continues on to connect to the Rockaway River.

Delineation of Service Areas and Planning Integration

Sewer Service Areas

Following are the sewer service areas within the Township of Mine Hill. The existing areas served and future SSAs are shown on Maps 2M and 3M, respectively. The facility providing treatment to this service area is listed in a facility table in Appendix C.

- RVRSA STP (NJPDES NJ0022349; DSW) – This SSA encompasses most of the eastern portion of the Township.

The following SSAs represent smaller defined service areas within Township of Mine Hill. These facilities have an associated facilities table in Appendix C.

- Cinders Restaurant (NJPDES NJG0173681; T1) – This small SSA serves Cinders Restaurant on Rt 46 just west of Iron Mountain Road.

- Ferromonte Plaza (NJPDES NJG0183814; T1) – This small SSA serves the Ferromonte Plaza on Rt 46 just east of Scrub Oaks Road.

- Multi-Use Building (NJDPES NJG0259314; T1) – This small SSA serves a multi-use (residential and commercial uses) building on Rt 46 located between Weber Lane and Randall Avenue.

There is an Unassigned SSA in the western portion of the Township, shown on Map 3M. At this time, it is not known which facility will serve this area.

Non Sewer Service Area

Non Sewer Service Areas (Non SSAs) consist of those areas with onsite ISSDS that discharges to groundwater of less than 2,000 gallons per day (i.e. residential septic systems) that are neither designated for sewer service as either an Assigned SSA or Unassigned SSA.

Coordination and Compliance with the New Jersey Highlands Regional Master Plan

The Township of Mine Hill is entirely within the New Jersey Highlands Planning Area. As of December 7, 2009, the Township of Mine Hill has not chosen to conform to the Highlands Regional Master Plan for the Planning Area. Therefore, the standards in the NJDEP Water Quality Management Rules, N.J.A.C. 7:15-1 et seq., were utilized for the Township within the Planning Area.

Significant Actions

As Mine Hill is one of eleven municipalities that are served entirely or partially by the RVRSA it is anticipated that the full build-out for RVRSA will go beyond its permitted capacity of 12 MGD. As additional individual municipal chapters for other RVRSA municipalities are completed the facility table (see Appendix C) will be updated to reflect these numbers.

An anti-degradation analysis has already been completed by RVRSA and approved by the NJDEP for a flow up to 15 MGD. The RVRSA may require the construction of two (2) additional final clarifiers, one (1) additional chlorine contact tank, and related improvements in order to be able to expand the plant beyond 12 MGD. RVRSA's application for an expansion of their permitted capacity must be submitted to the NJDEP as a Treatment Works Approval (TWA) package. The construction cost for this expansion is estimated to be about $7 million, which would translate to a capital loan cost of approximately $9.1 million (in 2018 dollars). RVRSA's board would have to approve this expansion, which would likely not occur until the actual flow begins to approach the current 12 MGD permitted capacity. The NJPDES permit limits at a flow of 15 MGD cannot take effect until an amendment with the full build-out is adopted, the TWA is approved, and the necessary construction is completed.

The Canfield Avenue School (NJG0102822) connected to the RVRSA many years ago. The SSA map was never updated to reflect this. The SSA map will now be updated to reflect this with the adoption of this WMP.

The Multi-Use Building (NJG0259314) has been added to the RVRSA SSA and will look to connect once it has the ability to. Previous WMP amendments for Mine Hill included the Multi-Use Building in the RVRSA SSA, but never identified it as a T1 facility, and did not include the appropriate gallonage. Adoption of this WMP will rectify this omission. The

Ferromonte Plaza (NJG0183814) will be placed in an Unassigned Sewer Service Area. This change will be effective with the adoption of this WMP.

Prior to the adoption of this WMP, there were approximately 567 acres in the RVRSA SSA (this included several recent WMP amendments done by Mine Hill Township). In addition, the Canfield Ave SSA is about 6.7 acres and the Cinders Restaurant is about 0.4 acres. As indicated above the Canfield Ave SSA connected to the RVRSA SSA many years ago. Cinders Restaurant will remain as is.

SSAs for the Multi-Use Building and Ferromonte Plaza will be placed in the RVRSA and Unassigned SSA respectively. These two T1s are not currently shown separately in the SSA.

Unassigned SSA Changes:

- Addition of 143.8 acres to this SSA. Prior to the adoption of this WMP there was no Unassigned SSA in Mine Hill Township.
- Ferromonte Plaza (T1) is approximately 6.6 acres and will be part of the Unassigned SSA. This acreage is included in the 143.8 acres listed above.
- Post adoption this SSA will have 143.8 acres in it.

RVRSA SSA Changes:

- Prior to the adoption of this WMP there was 567 acres in the RVRSA SSA.
- There were 233 acres of environmental constraints removed from the SSA by NJDEP.
- 156 acres were added to the RVRSA SSA.
- The Multi-Use Building (T1) is proposed to connect to RVRSA. This lot will only add about 0.57 acres to the RVRSA SSA. This acreage is included in the 156 acres listed above.
- After the WMP is adopted there will be 490 acres in the RVRSA SSA in Mine Hill.

Future Wastewater Demand and Facilities

For the purposes of evaluating capacity and future sanitary flow rates, the full build-out of undeveloped or underdeveloped land in the Township was derived from existing zoning and the development potential of land parcels within the Township. The results of the build-out analysis were compared to the permitted treatment capacity of major wastewater treatment facilities. This analysis was not required for the minor facilities listed in Table 1a above.

Sewer Service Area Wastewater Capacity Analysis

Table 2a presents the results of the Build-out Analysis within the SSAs indicated above.

Table 2a: Township of Mine Hill Build-out Table (SSAs)

Major Public Wastewater Treatment Facility	*Capacity Allocation (MGD)	Total Existing Flow (MGD)	Total Flow Attributed to TWAs Approved But Unconnected (MGD)	Residential Build-out Flow (MGD)	Non-Residential Build-out Flow (MGD)	Existing Septic Systems Flow (MGD)	Total Projected Build-out Flow*** (MGD)	*Remaining Capacity Allocated to Mine Hill (MGD)
RVRSA STP	0.131042	0.083273	0.0578	0.121	0.005	0.139	0.406	-0.275
**Unassigned SSA	NA	0	0	0.014	0.065	0.138	0.217	N/A

* Allocation identified in this document are neither NJDEP-determined nor NJDEP-enforced. They are used entirely by RVRSA and its customer communities. The NJDEP does not establish these allocations and is not involved in any agreements to set them.

** For unassigned SSA, the entire wastewater demand calculated constitutes a potential capacity deficiency.

*** Projections are based on analysis completed in July 2019

Treatment Works Approvals (TWAs) approved by NJDEP for unconnected projects within the Township of Mine Hill consist of the following:

Table 2b – Treatment Works Approvals

TWA	Facility	Unconnected Flow (MGD)
Alpine Valley Neighborhood Project	RVRSA STP	0.0197
Randall Ave/Thomastown/Valleyview	RVRSA STP	0.0115
Howard Ave	RVRSA STP	0.0072
Indian Falls	RVRSA STP	0.0033
Alpine Valley Phase II	RVRSA STP	0.0161
Total		0.0578

The capacity of the RVRSA STP is shown in the Facility Table C1420-2. The facility provides treatment on a "first-come, first-serve" (FCFS) basis to member communities only. The Township of Mine Hill is a customer of RVRSA and not a member community and therefore does not fall under the FCFS rule. The Township currently has an allocation of 0.131042 MGD. The total projected build-out flow is 0.406 MGD which is 0.275 MGD above their allocated flow. Table 2a shows the Township of Mine Hill does not have a sufficient allocation with RVRSA STP to meet the calculated build-out potential within the Township.

As Mine Hill is only one of eleven municipalities that RVRSA serves, one needs to look at the entire build-out to determine if there is available capacity. An entire analysis of all municipalities will be completed, in the interim it is expected that build-out for the entire RVRSA will go beyond their permitted capacity of 12 MGD. The build-out from Mine Hill itself will put RVRSA over its capacity; in addition, Mine Hill has not acquired enough capacity to serve all areas in the SSA. RVRSA has received its final permit to increase its capacity up to 15 MGD. It is expected that this increase will be sufficient to serve all eleven municipal build-out needs after the Water Quality Management Plan is amended to allow for the expansion.

Mine Hill Township has been actively negotiating with RVRSA to acquire additional allocation from the STP. It is expected that Mine Hill will seek to obtain additional gallonage from RVRSA to address the sewer capacity deficit of the allocated flow.

For unassigned sewer service areas, the entire wastewater demand constitutes a potential capacity deficiency. Mine Hill will continue to investigate connecting to a regional STP or build a new DSW or DGW wastewater treatment facility to address this deficit. A new DSW or DGW wastewater treatment facility would require a subsequent amendment, if required.

Flows for the additional minor facilities in the municipality are anticipated to remain the same through at least the term of this WMP.

Non Sewer Service Area Wastewater Capacity Analysis

Table 3 presents the results of the Build-out Analysis within the Non SSA. The Non SSA is shown on Map 3M.

The breakdown by HUC11 subwatershed is shown below.

Table 3 – Township of Mine Hill Build-out by HUC11 (Non SSA)

HUC11[1]	Build-out Potential (Equivalent Dwelling Units)		Surplus/ Deficit
	Using Nitrate Dilution Model	Under Municipal Zoning	
02030103030	65	53	12
02030105050	60	67	-7

[1] The Build-out potential within this HUC 11 is for that portion within the municipal boundary. It does not represent the entire HUC 11 boundary within Morris County and only represents the portion of the HUC11 within the Township of Mine Hill.

The Non Sewer Service Area (i.e., septic) build-out capacity analysis for Township of Mine Hill was based on the 2.0 mg/L target concentration of nitrate in groundwater.

HUC 02030103030 does not have a deficit.

HUC 02030105050 has a deficit, however it is within the 10% buffer allowed by the NJDEP as and therefore no further analysis is required for this HUC11 in Mine Hill. In addition, the largest potential development in this HUC would be above 2,000 gpd and would be required to obtain a NJDPES permit. If this development obtains a NJDPES permit or connects to a regional STP there would be no deficit in this HUC.

Water Use and Conservation Management Plan

"There are two deficit HUC 14 subwatersheds within or partially within Mine Hill Township according to the Highlands Regional Master Plan (2008) Net Water Availability (NWA) analysis. The primary purpose of a Highlands Water Use and Conservation Management Plan (WUCMP) is to reduce, and where feasible, eliminate deficits in subwatersheds where water use was determined to exceed its availability, and therefore deemed to be in deficit. A municipal-wide WUCMP can identify appropriate management strategies in select subwatersheds that can help ameliorate such water deficits or potential impacts on water supply source areas. There are many water conservation strategies that may support deficit reduction including water system leak detection and reduction, meter calibration or replacement, outdoor water use reduction and enhanced stormwater recharge to name a few. The Highlands Council intends to work directly with Mine Hill Township in the formation of the municipal-wide WUMCP that all parties agree with.[1]

[1] As per the Highlands Council.

Table C1420-1 **CINDERS RESTUARANT** **SANITARY SUBSURFACE SEWAGE DISPOSAL SYSTEM GENERAL PERMIT** **(T-1 PERMIT) TREATMENT FACILITY TABLE**	
1. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0173681
2. Discharge to ground water (DGW):	DGW
3. Receiving aquifer:	Albite-Oligoclase Granite
4. Classification of receiving aquifer:	II-A
5. Owner of facility:	John Freda
6. Operator of facility:	John Freda
7. Location of facility:	
a. Municipality & County	Mine Hill, Morris County
b. Street address	319 Rt 46 Mine Hill, NJ 07801
c. Block(s) and Lot(s)	Block 401 Lot 1
8. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude _____ b. Latitude _____ or c. State Plane Coordinates X: 462516 Y: 745486
10. Summary of current population served identifying all wastewater generating uses:	
School: Identify number of students and staff (specify cafeteria, labs, showers)	
Institution: Identify number of beds	
Restaurant: Identify number of seats	Existing restaurant building with 3,400 sq. ft. and has a 224 person seating capacity.
Commercial: Identify amount of square footage	
Campground: Identify numbers of sites (specify if laundry, store, bathhouses)	
Other: Refer to N.J.A.C. 7:9A-7.4	

Table C1420-2 DOMESTIC TREATMENT FACILITIES SERVING MULTIPLE MUNICIPALITIES		
1. Existing facility:	Rockaway Valley Regional Sewerage Authority STP*	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ0022349	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW	
4. Receiving water or aquifer:	Rockaway River	
5. Classification of receiving water or aquifer:	FW2-NT(C2)	
6. Owner of facility:	Rockaway Valley Regional Sewage Authority	
7. Operator of facility:	Rockaway Valley Regional Sewage Authority	
8. Co-Permittee of facility *(where applicable)*:		
9. Location of facility:		
a. Municipality & County	Parsippany-Troy Hills Township, Morris County	
b. Street address	99 Green Bank Road, Parsippany-Troy Hills,	
c. Block(s) and Lot(s)	Block 493 Lot 1	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude _____ b. Latitude _____ or	
	c. State Plane Coordinates X: 521,903 Y: 751,431	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	12 MGD	
*12. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2015) Population	Build-out or 20-Year Future (Year 2035)
Municipality: Mine Hill Township	621	1,375
Total		
*13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current Flow (in MGD)	Build-out or 20-Year Future (Year 2035) (in MGD)
Municipality: Boonton Town		
Municipal Total - Actual	**0.788**	**0.788**
Municipal Total - Projected Flow		**0.788**
Municipality: Boonton Township		
Municipal Total - Actual	**0.143**	**0.143**
Municipal Total - Projected Flow		**0.143**
Municipality: Denville Township		
Municipal Total - Actual	**1.586**	**1.586**
Municipal Total - Projected Flow		**1.586**
Municipality: Dover Town		
Municipal Total - Actual	**2.886**	**2.886**
Municipal Total - Projected Flow		**2.886**
Municipality: Mine Hill Township		
Municipal Total - Actual	**0.083**	**0.083**
Approved TWA's	0.058	0.058
Build-out		0.126
Municipal Total - Committed Flow	**0.141**	
Septics in the SSA		0.139
Unused Service Contract (3)		0.000
Municipal Total - Projected Flow		**0.406**

Municipality: Parsippany-Troy Hills Twp.		
Municipal Total - Actual	**0.003**	0.003
Municipal Total - Projected Flow		**0.003**
Municipality: Randolph Township (1)		
Municipal Total - Actual	**1.259**	**1.259**
Municipal Total - Projected Flow		**1.259**
Municipality: Rockaway Borough		
Municipal Total - Actual	**0.747**	**0.747**
Municipal Total - Projected Flow		**0.747**
Municipality: Rockaway Township (1)		
Municipal Total - Actual	**2.498**	**2.498**
Municipal Total - Projected Flow		**2.498**
Municipality: Victory Gardens Borough		
Municipal Total - Actual	**0.226**	**0.226**
Municipal Total - Projected Flow		**0.226**
Municipality: Wharton Borough (1)		
Municipal Total - Actual	**1.003**	**1.003**
Municipal Total - Projected Flow		**1.003**
Other: Picatinny Arsenal (2)		
Arsenal Total - Actual Flow	0.162	0.162
Approved TWA's	0.000	0.000
Unused Service Contract (3)		0.338
Arsenal Total - Committed Flow	0.162	
Picatinny Arsenal Total Flow		**0.500**
Facility Total - Actual Flow	**11.385**	
Facility Total - Committed Flow	**11.443**	
Facility Total - Projected Flow		**12.046**

(1) Randolph Township, Rockaway Township, and Wharton Borough have indicated they will conform to the Highlands Regional Master Plan. Future Flows calculated for the purpose of this WMP are subject to revision upon the finalization of each municipalities's Municipal Build-out Report required as part of their Highlands Regional Master Plan Conformance.

(2) Picatinny Arsenal has purchased and has the right to 0.5 MGD.

(3) For RVRSA, the "Unused Service Contract Flow" refers to the unused IPP Capacity of industrial facilities for each municipality

*Existing flow is from the 3/2011 to 2/2012 time period. This period was used as it better accounts for wet weather flow.

Table C1420-3 **FERROMONTE PLAZA** **SANITARY SUBSURFACE SEWAGE DISPOSAL SYSTEM GENERAL PERMIT** **(T-1 PERMIT) TREATMENT FACILITY TABLE**	
1. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0183814
2. Discharge to ground water (DGW):	DGW
3. Receiving aquifer:	Microperthrite Alaskite
4. Classification of receiving aquifer:	II-A
5. Owner of facility:	MHM Route 46 LLC D/B/A Ferromonte Plaza
6. Operator of facility:	MHM Route 46 LLC D/B/A Ferromonte Plaza
7. Location of facility:	
a. Municipality & County	Mine Hill, Morris County
b. Street address	273 Rt 46 Mine Hill, NJ 07801
c. Block(s) and Lot(s)	Block 807, Lot 1; Block 808, Lots 2, 9
8. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude _____ b. Latitude _____ or c. State Plane Coordinates X: 463822 Y: 745705
10. Summary of current population served identifying all wastewater generating uses:	
School: Identify number of students and staff (specify cafeteria, labs, showers)	
Institution: Identify number of beds	
Restaurant: Identify number of seats	
Commercial: Identify amount of square footage	~16,000 sq foot commercial building
Campground: Identify numbers of sites (specify if laundry, store, bathhouses)	
Other: Refer to N.J.A.C. 7:9A-7.4	

Table C1420-4 **Multi-Use Building** **SANITARY SUBSURFACE SEWAGE DISPOSAL SYSTEM GENERAL PERMIT** **(T-1 PERMIT) TREATMENT FACILITY TABLE**	
1. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0259314
2. Discharge to ground water (DGW):	DGW
3. Receiving aquifer:	Microperthrite Alaskite
4. Classification of receiving aquifer:	II-A
5. Owner of facility:	Salvatore Milelli
6. Operator of facility:	Salvatore Milelli
7. Location of facility:	
a. Municipality & County	Mine Hill, Morris County
b. Street address	173 Rt 46 Mine Hill, NJ 07801
c. Block(s) and Lot(s)	B: 1302, L: 6
8. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude _____ b. Latitude _____ or c. State Plane Coordinates X: 465980 Y: 745941
10. Summary of current population served identifying all wastewater generating uses:	
School: Identify number of students and staff (specify cafeteria, labs, showers)	
Institution: Identify number of beds	
Restaurant: Identify number of seats	
Commercial: Identify amount of square footage	
Campground: Identify numbers of sites (specify if laundry, store, bathhouses)	
Other: Refer to N.J.A.C. 7:9A-7.4	4 -1 bedroom 2- 2 bedroom Nail Salon 2,903 sq feet 2,017 sq feet office