Essex County Wastewater Management Plan

Municipality	Status	Municipality	Status
Belleville Township	Current	Montclair Township	Current
Bloomfield Township	Current	City of Newark	Current
Caldwell Borough	Included	North Caldwell Borough	Included
Cedar Grove Township	Included	Nutley Township	Current
City of Orange Township	Current	Roseland Borough	Included
East Orange City	Current	South Orange Village Township	In Adoption
Essex Fells Borough	Included	Verona Township	Included
Fairfield Township	Included	West Caldwell Township	Included
Glen Ridge Borough	Current	West Orange Township	In Adoption
Irvington Township	In Adoption		
Livingston Township	Included		
Maplewood Township	In Adoption		
Millburn Township	In Adoption		

Amending the Following Areawide Water Quality Management Plan:
Northeast

Submitted by the Board of Chosen Freeholders of the County of Essex

Date of Current Submittal: *(December 4, 2014)*

Approved by the New Jersey Department of Environmental Protection:
(Insert Date of NJDEP Approval)

Prepared By:

Hatch Mott MacDonald
111 Wood Avenue South
Iselin, NJ 08830-4112
(973) 379-3400

Table of Contents

List of Tables

List of Maps

I. Introduction

The purpose of this document is to provide a comprehensive Wastewater Management Plan (WMP) for Essex County. The WMP is generally intended to project future development and the associated wastewater management and water supply requirements associated with that development. The WMP planning process was designed to protect environmentally sensitive areas and to reduce pollutant loads to the groundwater.

The WMP has been submitted to the New Jersey Department of Environmental Protection (Department) for approval so that it may be incorporated into the Northeast Areawide Water Quality Management Plan via the plan amendment procedure at N.J.A.C. 7:15-3.

Alternative Assignment of Wastewater Management Planning Responsibility

As of the date of submittal, wastewater management planning responsibility for the full County remains with the County Board of Chosen Freeholders and no alternative assignments have occurred pursuant to NJAC 7:15-5.13.

The Essex County Board of Chosen Freeholders has identified the County of Essex 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 County of Essex Department of Public Works, Division of Engineering.

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

The Essex County WMP incorporates or replaces part or all of a variety of previously approved WMPs prepared by municipalities, wastewater authorities, or the county itself.

The Water Quality Management Plan (WQMP) rule provides that any WMP previously approved by NJDEP may remain in force and effect until six (6) years from that approval date. In this county, the previously approved WMPs listed in **Table 1** are still considered current, until the expiration date as noted.

The County WMP does incorporate the wastewater service areas and facility tables from these WMPs by reference if not physically part of the County WMP.

Table 1. Current WMPs That Remain In Effect

WMP Planning Area	Municipalities	Expires
Passaic Valley Sewerage Commission	City of Newark (partial) City of East Orange (partial) Township of Bloomfield Township of Belleville Township of Nutley Township of Montclair (partial)	December 8, 2014

Table 1. Current WMPs That Remain In Effect		
WMP Planning Area	**Municipalities**	**Expires**
	Borough of Glen Ridge Township of City of Orange (partial) Township of South Orange Village (partial) Township of Cedar Grove (partial) Township of West Orange (partial) Borough of North Caldwell (partial)	
Joint Meeting of Essex & Union Counties	Township of Irvington (partial) Township of Maplewood Township of South Orange Village (partial) Township of Millburn Township of West Orange (partial) Township of Livingston (partial) Township of Verona (partial) City of Newark (partial) Township of Montclair (partial) City of East Orange (partial) Township of City of Orange (partial)	Currently in adoption process
Two Bridges Sewerage Authority	Township of Fairfield Township of West Caldwell	

Overview of County

Essex County is located in the northeast portion of New Jersey and is surrounded by Passaic and Bergen Counties to the north, Hudson County to the east, Union County to the south and Morris County to the west. Essex County is a diverse area of New Jersey, as it contains one of the most urban areas in the State, the City of Newark and inner ring urban and outer ring suburban municipalities such as Essex Fells and Livingston. Despite visual and functional differences, the County's twenty-two municipalities have at least one thing in common: they are at or nearing full build-out. This fully developed character places the majority of the planning focus on improving or replacing existing infrastructure, and preserving the little available land to serve as parks and open space for a growing population.

Essex County is home to Newark, the county seat, and one of the industrial and financial centers of the state and the entire Northeast. The county possesses a wide range of transportation facilities, from Port Newark to Newark International Airport, Essex County Airport and extensive commuter rail service. The county is a hub for major national and international transportation, providing freight service by trucks and rail. There is local and national passenger rail service and easy access to the NJ Turnpike and Garden State Parkway. The western part of the county offers pleasant residential communities and a variety of travel options. More than half of the county's land is used for residential purposes, while approximately 30 percent is devoted to forest and public lands. While switching to a service-oriented economy from a manufacturing base, county businesses can rely

on a skilled and accomplished labor force, commuters depend on an excellent transportation system and both benefit by the central location. Several corporate headquarters, including PSE&G and Prudential, are located in the county.

The county contains an extensive parks system, managed by the Essex County Department of Parks, Recreation and Cultural Affairs (also known as the Essex County Park System or ECPS). The ECPS manages not only the parks, but reservations, trails and numerous golf courses.

The current population estimate for Essex County is 783,969 as of the 2010 Census, a decrease of 1.2% from 793,633 as denoted in the 2000 Census. As of the 2010 Census, Essex County is the third largest (by population) county in New Jersey.

Overview of Current Wastewater Services and Wastewater Responsibilities

The County includes community wastewater systems that serve 91 percent of the total County area and 99 percent of the total County population. Sewer service areas (SSAs) do not necessarily follow municipal boundaries and may include industrial businesses that discharge process wastewater to the collection system for treatment by a facility not owned by that business. Essex County comprises mostly older development patterns and contains some of the oldest sewerage facilities in the state and region. Traditional municipally-owned or regional sewerage authorities incurred the initial debt to construct these facilities and annually charge sewer utility rates either through the municipal and county tax base and or through authority rates set annually as prescribed in the NJ statutes. There is a long standing practice of operations and maintenance of these facilities by these public entities that historically have rehabilitated, modified and/or expanded these facilities to keep them viable.

Since the existing infrastructure is older, particularly within the PVSC and JMEUC sewered areas, there are existing Combined Sewer Overflows (CSO's). These facilities are regulated by the state. Within the unconsolidated portion of Essex County, there are no known CSO's.

Overview of Current Water Services and Water Supply Responsibilities

Public community water supply systems serve 91 percent of the total County area and approximately 99 percent of the total County population.

The water supply for Essex County comes from a combination of groundwater wells and surface water. Several large public and private water systems provide water for much of Essex County through extensive water supply networks and interconnections. Each municipality in Essex County has its own water department. Some municipalities own and operate their own groundwater wells and some supplies are purchased from the large water systems by a contract agreement (or a combination of municipal-owned wells and purchased water).

The New Jersey Statewide Water Supply Plan (August 1996) indicates that no regional deficits were forecast based on the model used. Supply is generally available; the Plan cautions that since this region is the most highly and densely populated in New Jersey, the projections should be continually updated as new data is made available. Special attention should also be paid to water conservation.

Municipal water supplies are discussed in detail in each municipal chapter.

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

Wastewater Management Planning is part of the continuing planning process required by the New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.) and Section 208 of the Federal Clean Water Act. The intent of the continuing planning process is to align Federal, State, regional and local land use planning to ensure that these land use plans do not conflict with each other.

The provision of environmental infrastructure, in particular centralized sewer service, has a profound influence on development patterns and intensity. The wastewater management planning process is intended to assign an appropriate wastewater management treatment alternative to geographic areas based on environmental sensitivity and other land use planning objectives such as regional center-based development or farmland preservation. The extension of public sewers into areas designated for protection by Federal, State, regional or local land use plans would be inconsistent with those protection objectives.

The adopted Water Quality Management Planning Rules (N.J.A.C. 7:15) generally exclude the extension of sewer service into large contiguous areas, defined as 25 acres or more, of wetlands, Category One (C1) water buffers (riparian zone), Natural Heritage Priority Sites and/or endangered and threatened species habitat. The extension of sewer service into these areas would encourage their development and thus conflict with the Department of Environmental Protection's statutory mandate to protect these resources.

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

Additional regional and local land use planning objectives used in delineating appropriate areas for public sewer service are discussed in the municipal chapters of this WMP.

Overview of Future Wastewater Services and Responsibilities

Based on the environmental, regional and local land use planning objectives discussed above and the identified areas that are currently built but do not currently have adequate wastewater treatment, **Maps 1, 2 and 11** identify areas presently served by public sewers and the appropriate areas to be served by public sewers in the future. These maps also identify sites that are served by an on-site treatment works that is regulated under a New Jersey Pollutant Discharge Elimination System permit. Each sewer service area is keyed to a specific sewage treatment plant which is the facility authorized under this plan to accept and treat wastewater from that sewer service area. Each sewage treatment plant identified in this plan has an accompanying facility table that provides information concerning that facility's owner, operator, permitted flow, existing flow, remaining permitted flow and projected build-out flow summarized by municipality. Based on the buildout analysis of each sewer service area and the existing permitted capacity of the sewage treatment plants identified in this plan, future expansion of the identified treatment works is not required to meet the future wastewater generation needs of the County.

Summary of Significant Actions

Amendments to the Water Quality Management Planning Rules readopted on May 20, 2008 with Amendments, Repeals and New Rules on July 7, 2008 (published in the New Jersey Register on July 8, 2008) necessitated a modification to certain sewer service areas based on environmental sensitivity and local planning objectives as described in this document. In accordance with the regulatory requirement, the NJDEP performed modifications to certain SSAs based on environmental sensitivity and local planning objectives.

One sewer service area in North Caldwell was edited to show the correct existing boundaries. That is, there were no changes to the actual sewer service provided to the area, but the map boundaries were corrected to reflect actual conditions. The area was previously shown tributary to the Caldwell STP but is actually tributary to TBSA. One additional sewer service area boundary in Fairfield was edited to show the correct existing boundaries. Again, there were no changes to the actual sewer service provided to the area, but the map boundaries were corrected to reflect actual conditions. The area was previously shown tributary to TBSA but is actually tributary to the Caldwell STP. **Map 11** depicts the adopted sewer service area as a result of this wastewater management plan.

II. Existing Infrastructure and Demographic Information

This section addresses wastewater treatment facilities utilized by development within the County, whether the treatment works itself is located within or outside of the County.

Existing Areas Served by Wastewater Facilities

Map 1 shows the areas actively served by existing wastewater facilities, and the tables in Appendix D provide detailed information on each facility. "Actively served" means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected. Actively served areas are based on collection maps provided by each municipality.

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

Existing Public Wastewater Treatment Works

Table 2 lists the major domestic wastewater treatment facilities and the municipality or municipalities they serve. The sewer service areas and the associated treatment works, are depicted on **Maps 1 and 11**.

It is noted that the Wastewater Utilities listed in **Table 2** are all located within Essex County. A portion of the Township of Livingston is tributary to the Parsippany-Troy Hills STP, located in Morris County. Additional portions of the Township of Livingston are tributary to JMEUC, located in Union County. The JMEUC has its own WMP which is currently in the process of adoption. Portions of the Township of Cedar Grove and the Borough of North Caldwell (refer to **Map 11)** are tributary to PVSC (located in Essex County), which has its own WMP (expires on December 8, 2014) and is not located within the unconsolidated area.

Table 2. Wastewater Facilities and Municipalities Served

Wastewater Utility	Municipalities Served
Caldwell Borough STP	Township of West Caldwell Borough of Essex Fells Borough of Roseland Borough of North Caldwell Township of Fairfield Borough of Caldwell Township of Verona Township of West Orange Township of Livingston
Cedar Grove Township STP	Township of Cedar Grove
Verona Township STP	Township of Verona Township of Cedar Grove Borough of North Caldwell Borough of Caldwell Borough of Essex Fells

Table 2. Wastewater Facilities and Municipalities Served	
Wastewater Utility	**Municipalities Served**
	Township of West Orange
Livingston Township STP	Township of Livingston Township of Millburn

Major Transmission Piping and Pumping Stations

Map 2 shows the major interceptors, trunk lines and pumping stations within the various sewer service areas for public wastewater treatment facilities.

Existing On-site, Non-industrial Wastewater Facilities

These facilities (minor wastewater) serve single developments, sites or other properties under single ownership, but do not treat industrial flows. These facilities typically provide wastewater treatment for apartment complexes, commercial properties and businesses where regional sewerage is not available. **Table 3** lists all existing on-site, non-industrial treatment facilities that discharge to surface water or that discharge more than 2,000 gallons per day of domestic wastewater and are regulated under a NJPDES permit. The facilities are shown on **Map 1** and are described below:

Table 3. On-site, Non-industrial Wastewater Facilities (Minor Wastewater)			
Facility	**Municipality Location**	**NJPDES Permit #**	**Discharge to Groundwater or Surface Water**
B&G Foods Inc.	Roseland Borough	NJ0003743	Surface
Servometer Corporation	Cedar Grove Township	NJ0027847	Surface
Prestige Rubber Mfg Corp.	Fairfield Township	NJ0086436	Surface

The associated facilities tables are located in Appendix C.

There are additional on-site non-industrial discharges that are located in the PVSC and Joint Meeting service areas that are addressed their respective WMPs.

Existing Industrial Treatment Works for Process Wastes and Sanitary Sewage

Some industrial land uses have independent wastewater treatment facilities that treat and discharge manufacturing process waste or sanitary sewage, rather than other types of effluent such as non-contact cooling water. They may be discharged to ground water or to surface water. **Table 4** lists all existing industrial treatment works that discharge to surface water or that discharge more than 2,000 gallons per day of process or sanitary wastewater and are regulated under a NJPDES permit.

Table 4. Industrial Treatment Works for Process Waste and Sanitary Sewage			
Facility	**Municipality Location**	**NJPDES Permit #**	**Discharge to Groundwater or Surface Water**
Exxon S/S 31310	Livingston Township	NJG0155501	Surface

The associated facilities table is located in Appendix C.

There are additional industrial treatment works discharges that are located in the PVSC and Joint Meeting service areas that are addressed their respective WMPs.

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

Remaining areas of the County, not otherwise designated as service areas for treatment facilities requiring a NJPDES permit, are included within a general wastewater management area for septic systems and other small treatment works that treat 2,000 gallons per day or less of wastewater and discharge to ground water.

Existing Public Water Supply Facilities

Table 5 lists the public community water supply facilities and the municipality or municipalities they serve. The service areas are depicted on **Map 3**.

Table 5. Water Supply Utilities and Municipalities Served		
Water Supply Utility	**Primary Municipality Served**	**Sells to**
Fairfield Water Department	Township of Fairfield	none
North Caldwell Water Department	Borough of North Caldwell	Cedar Grove W.D. West Caldwell W.D.
West Caldwell Water Department	Township of West Caldwell	none
Cedar Grove Water Department	Township of Cedar Grove	none
Essex Fells Water Department	Borough of Essex Fells	Caldwell W.D North Caldwell W.D. Roseland W.D.
Roseland Water Department	Borough of Roseland	none
Caldwell Water Department	Borough of Caldwell	None
Livingston Water Division	Township of Livingston	none
Verona Water	Township of Verona	Essex Fells - Hilltop

Table 5. Water Supply Utilities and Municipalities Served		
Water Supply Utility	**Primary Municipality Served**	**Sells to**
Department		

The water supply comes from a combination of surface water and groundwater wells. The following major water purveyors supply the water supply utilities listed in **Table 5**, as primary, supplementary and/or emergency suppliers:

- North Jersey District Water Supply Commission
- New Jersey American Water Company – Little Falls
- New Jersey American Water Company – Short Hills
- Passaic Valley Water Commission
- Jersey City Municipal Utilities Authority

III. Environmental and Other Land Features

Environmentally Sensitive areas 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.

This section includes a description and mapping of environmental features and public open space for the county. These features are significant to wastewater management planning for three reasons: they may influence the delineation of sewer service areas, they may reduce the potential future wastewater generation due to existing regulatory programs, or they may be subject to federal grant limitations that prohibit the extension of sewer service into these areas. Some of this mapping has been used in the development of a map of environmentally sensitive areas where the extension of sewer service areas is restricted (see Delineation of Sewer Service Areas, below).

Development in areas mapped as wetlands, flood prone areas, designated river areas, or other environmentally sensitive areas may be subject to special regulation under Federal or State statutes or rules. Interested persons should check with the Department of Environmental Protection for the latest information. Depiction of environmental features is for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules.

Surface Waters and Classifications—**Map 4** shows the surface waters as mapped by NJDEP based on 1995/97 aerial photography. This is the most current mapping of surface waters for which surface water quality standards classifications were available. The County has 252 miles of streams, along with approximately 922 acres of ponds, lakes and reservoirs. Of these surface waters, the Passaic River is the largest river in Essex County and forms the western and eastern boundaries of the County.

Riparian Zones -- **Map 4** shows riparian zones or buffers that are established along all surface waters under the following of regulations: Flood Hazard Area Control Act Regulations, the Highlands Water Protection and Planning Act Regulations, the Stormwater Management Rules, the Water Quality Management Planning Rules and through municipal ordinances. FW1 waters are non-degradation waters in which no change from natural quality shall be allowed. Category One (C-1) waters, their tributaries and all Highlands waters are afforded a 300-foot buffer. The riparian zone adjacent to trout production waters and all upstream waters, including tributaries, is 150-feet. The riparian zone adjacent to trout maintenance waters and those that contain documented habitat for threatened and endangered species (that are not C-1 waters), which is critically dependent on the water body for survival and upstream tributaries within one mile is 150-feet. The riparian zone of a segment of water flowing through acid producing soils is 150 feet. The riparian zone adjacent to all other surface waters is 50-feet. Most development within these riparian zones is limited by these regulatory programs.

Surface waters that are designated Category One are listed in the Surface Water Quality Standards at N.J.A.C. 7:9B. The Department's "Surface Water Quality Standards" GIS data layer was utilized to determine these waters. The applicable 300 foot buffer has been applied to these waterways and removed from the proposed sewer service areas on the mapping. Lesser width buffers have not been graphically removed from the sewer service area but are not proposed for sewer service. Jurisdictional determinations by the Department will be utilized to determine the extent of the sewer service area on individual lots.

Flood Prone Areas – **Map 5** shows the flood prone areas as mapped by NJDEP based on a combination of FEMA, NJDEP and aerial photography data. These areas may be subject to Federal 201 grant limitations that prohibit the extension of sewers to serve development in these areas. **Map 5** also shows FEMA DFIRM delineations

Freshwater Wetlands -- Freshwater wetlands as mapped by the NJDEP and based upon 2007 LULC are shown in **Map 5**. Freshwater Wetlands are regulated under the Freshwater Wetlands Protection Act Rules, which place stringent limits on development within these areas. Essex County contains 6,400 acres of wetlands. The majority of wetlands are located in the western portion of the County along the Passaic River with concentrations along Canoe Brook, Slough Brook, Pine Brook, Foulerton's Branch, and Deepavaal Brook. These wetlands are mainly located in Millburn Township, Livingston Township, Roseland Borough, West Caldwell Township and Fairfield Township. It is noted that more than half the Township of Fairfield is wetland.

Public Open Space and Recreation Areas –**Map 6** shows the land areas currently protected from development as public open space, and also shows other recreational areas that are owned and operated by land trusts, non-profit associations, and for-profit recreational businesses. Such properties are limited to those of 10 acres or more in size for mapping clarity. These areas are not expected to support additional development. Where future facilities may be developed on open space they are noted in the appropriate municipal chapter. While smaller dedicated open spaces exist, they do not have a significant effect on the delineation of wastewater service areas or the future generation of wastewater flow. Essex County contains 440 Acres of State-owned open space and 6,614 acres of County and Municipal-owned open space. The largest open space areas in the County, listed in order of decreasing area are:

- South Mountain Reservation - 1,838 acres
- West Essex Park (along the Passaic River) - 1,100 acres
- Eagle Rock Reservation - 405 acres
- Weequahic Park - 306 acres
- Great Piece Meadows (Fairfield) - 404 acres
- Branch Brook Park - 353 acres
- Byrne Golf Course - 163 acres
- Brookdale Park - 119 acres

Suitable Habitat for Threatened and Endangered Species – **Map 7** shows the areas identified by the NJDEP as being suitable habitat for threatened and endangered species, Ranks 3, 4 and 5, through the Landscape Project Version 3.1 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. In addition, the bald eagle foraging and the wood turtle habitat mapping were used as a species-specific mapped products under Rank 5 and Rank 3, respectively. Based on guidance from NJDEP, urban peregrine falcon habitat mapping was not used. The County has not verified the mapping of these areas. This mapping was primarily used in the delineation of sewer service areas as described in the next section. There are 15,452 acres of land in Essex County that fall within NJDEP's Landscape Project Areas Rank 3 and 4. Of the total acreage, 5,111 acres are Rank 3 and 10,341 acres are Rank 4. These areas are predominately located in the SW portion of the County in the Townships of Millburn and Livingston

along the Canoe Brook, Slough Brook, Willow Brook, and Foulerton's Branch watersheds. There are also areas located in Eagle Rock Reservation, Weequahic Park, and a portion located in Newark adjacent to the Newark Airport, Elizabeth Channel and Newark Bay.

Natural Heritage Priority Sites – **Map 7** shows the natural heritage priority sites mapped by NJDEP as of the date of this WMP. This mapping was primarily used in the delineation of sewer service areas as described in the next section. There are two natural heritage priority sites located in Essex County:

- Great Piece Meadows – 2,080 acres; There is a large portion of Great Piece Meadows Large located in Fairfield to the North of Interstate 80 which contains 2 state threatened and 2 state endangered species.

- Passaic Meadows Macrosite – 3,634 acres; The Passaic Meadows Macrosite includes Great Piece Meadows and portions of West Caldwell, Fairfield and Roseland along the Passaic River

Steep Slopes –**Map 8** shows the steep slopes defined as those slopes with a 20 percent slope or greater. These slopes are mapped using the USGS 10-meter Digital Elevation Model. There are limitations to the USGS data due to resolution issues. The development potential development of steep slopes is reduced by the Water Quality Management Planning Rules, **t**he Highlands Water Protection and Planning Act Rules and by municipal ordinance. Essex County contains 1,527 acres that are characterized as having steep slopes. These steep slopes are primarily located along the First and Second Watchung Mountains running in a north/south direction through the middle of the County.

Coastal Wetlands – There are no coastal wetlands as defined pursuant to the Wetlands Act of 1970, nor non-coastal estuarine wetlands, in this WMP area.

IV. Delineation of Sewer Service Areas and Planning Integration

The WQMP rules at NJAC 7:15-5.22 require coordination with and solicitation of comments or consent from certain agencies, entities and plans, and consistency with other plans. This section addresses those requirements. This chapter provides the method used to delineate future sewer service areas based on the mapping of significant environmentally sensitive areas, and consistency with other regional plans.

Environmentally Sensitive Areas Map

Under the Water Quality Management Planning Rules, large contiguous environmentally sensitive areas, generally defined as 25 acres or greater in size should be excluded from sewer service areas except under certain circumstances such as providing service to development that has already secured prior approvals or center based development approved by the Department of Environmental Protection through the Plan Endorsement process. **Map 9** shows the final results for the mapping of environmentally sensitive areas, based on the information described above and the WQMP rules. This map was created using the following process:

Merge the GIS layers for wetlands, Category One riparian zones, Natural Heritage Priority Sites, and Threatened and Endangered Species habitats, and any others used by the County areas into a single composite GIS coverage.

Correct the composite areas by eliminating areas designated as urban in the most recent land use land cover layer to address land use/land cover modifications that have occurred since the environmental feature layers were prepared.

Identify and delete any composite areas less than 25 acres in size from the map of environmentally constrained areas. When applied to the County, the total composite areas less than 25 acres comprised approximately 14% percent of the total environmentally sensitive area, or 1.7% percent of the County. The resulting **Map 9** shows the final environmentally sensitive areas, which is used to eliminate the potential for sewer service areas except where sewer service already exists, or exceptions are allowed for infill development or approved endorsed plans. It is noted for public information purposes that the excluded areas will be protected through other NJDEP regulatory programs such as the Flood Hazard Area Control Act and Freshwater Wetlands Act rules, and may be protected by municipal ordinances, as well.

Sewer Service Areas in Environmentally Sensitive Areas

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

- Where a development has secured approval under the Municipal Land Use Law and possesses a valid wastewater approval, the site may be included in the sewer service area if consistent with that valid wastewater approval.

- Where a project has an approved site-specific water quality management plan and wastewater management plan amendment from the Department the project may be included in the WMP consistent with that approved site specific amendment for a period of six years from the date the amendment was adopted.

- Where sewer service is necessary to support center based development under an "endorsed plan" (through the State Planning Commission relative to the State Development and Redevelopment Plan) and would not remove habitat critical to endangered or threatened species.

- Where 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 in detail in NJAC 7:15-5.24 et seq.

Exceptions to the Use of Geographic or Political Boundaries

Generally the sewer service areas in Essex County follow political boundaries, such as parcels, zoning and municipal or county borders. An exception is within Millburn, Maplewood, South Orange and West Orange where the South Mountain Reservation is excluded from the sewer service area;, the reservoir lands for NJ American Water Reservoirs 1, 2 & 3 in Livingston and Millburn; the Essex County Park in Verona; and the Hilltop Reservation in Verona. The Great Piece Meadows in Fairfield follows the Passaic River.

Coordination with Municipalities, Sewer Authorities and Water Utilities

Table 6 lists the municipalities, wastewater and water utilities that have been consulted during the preparation of the County WMP. The County consulted with them in writing and/or by telephone.

Table 6. Municipalities and Utilities Consulted

Municipality/Utility	Wastewater Utilities	Water Supply Utilities
Passaic Valley Sewerage Commission	X	
Joint Meeting of Essex & Union Counties	X	
Caldwell Borough	X	X
Cedar Grove Township	X	X
City of Orange Township	X	
East Orange City	X	
Essex Fells Borough	X	X
Fairfield Township	X	X
Glen Ridge Borough	X	
Irvington Township	X	
Livingston Township	X	X
Maplewood Township	X	
Millburn Township	X	

Table 6. Municipalities and Utilities Consulted		
Municipality/Utility	**Wastewater Utilities**	**Water Supply Utilities**
Montclair Township	X	
Newark City	X	
North Caldwell Borough	X	X
Nutley Township	X	
Roseland Borough	X	X
South Orange Village Township	X	
Verona Township	X	X
West Caldwell Township	X	X
West Orange Township	X	

Proposed Sewer Service Areas

Map 11 shows all proposed wastewater service areas for the County WMP, based on the following:

The municipal chapters where included in this WMP;

Existing, current WMPs, where such exist, to provide a complete map of wastewater service areas in the County. In such cases, no changes have been made to the future service areas described in these approved WMPs;

The existing areas served by sewers, where a municipal chapter has not been included due to lack of information.

All areas not mapped as sewer service areas default to the general service area with discharge to groundwater of 2,000 gallons per day less.

All existing, new, or expanded industrial pretreatment facilities requiring Significant Indirect User (SUI) permits and/or Treatment Works Approvals, and which are located within the specified sewer service area, are deemed to be consistent.

Pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas, are unaffected by adoption of this WMP and compliance is required. Please see municipal WMP Chapters for the existence of any applicable environmentally sensitive areas in which Federal 201 grant limitations prohibit the extension of sewer service.

The 300 foot riparian buffer has been applied to the applicable waterways and removed from the proposed sewer service areas on the mapping. Lesser width buffers have not been graphically removed from the sewer service area but are not proposed for sewer service. Jurisdictional determinations by the Department will be utilized to determine the extent of the sewer service area on individual lots.

V. Future County Wastewater Demand and Facilities

This chapter describes the build out methodology used to project future wastewater treatment demand for future sewer service areas and general wastewater management service areas within the County WMP. All of the municipalities within Essex County are considered "urban municipalities" for the purposes of build-out projections. The results of the analysis are presented in both the municipal chapters and in the facilities tables found in the appendices at the end of this document.

Municipal Zoning and Composite Zoning

The County has collected all available information on municipal zoning using digital sources. The status of municipal digital zoning information is listed below. Because municipal zoning ordinances are not uniform in their nomenclature or definitions, a composite zoning map has been developed to aid in understanding the patterns of anticipated development in the County. The many municipal zones have been aggregated into 13 composite zones based on their general similarities, as generally described in **Table 7** below and are presented on **Map 10**.

Table 7. Summary of County Composite Zones

Composite Zone Name	Zone Description	County Area (ac)
Low Density Residential	> 3 Ac/du or 3 Ac lot size minimums or greater	393
Medium Density Residential	>1 ac/du or > 0.5 Ac minimum lots	4,480
High Density Residential	all multi-family, townhouses, lots less than 0.5 AC minimum lot size, lots with less than 1 Ac/du	9,549
Mixed use	Residential and Commercial	229
Commercial	Commercial/Business/Offices	1,482
Commercial/Industrial	Commercial/Research Park	302
Commercial/ Light Industrial	Warehouse/Flexspace/Offices/non-process water manufacturing	2,034
Industrial	Research Park/Planned Industrial Park/Process water manufacturing	50
Light Industrial	Warehouse/Flexspace/Non-process water manufacturing	670
Limited Development/Conservation	Conservation Areas/Flood Protection Zones/Airport Safety Zones/Parks/Open Space	5,101
Government/Institutional	Municipal Lands/Schools/Colleges/Private Institutions	151
Open Space	Permanently preserved lands	918
Residential (Unclassified)		686

Municipal Demand Projections in Urban Municipalities

The Water Quality Management Planning rules define urban municipalities as those municipalities where less than 10 percent of the total land area of the municipality is "available land for development" after subtracting out permanently preserved open space. In these municipalities it is assumed that redevelopment of previously developed portions of the municipality will make up the majority of the future wastewater management needs. Therefore, an application of zoning to the undeveloped and developable land area of the municipality in these municipalities may underestimate their future wastewater management needs. In these municipalities a 20-year wastewater projection is based on population and employment projections from the North Jersey Transportation Planning Authority (NJTPA) has been used to project future wastewater generation.

All of Essex County is considered Urbanized. Therefore, future wastewater flow is calculated from the population and employment projections by multiplying the projected increase in population by 75 gallons per day per person and the projected increase in employment by 25 gallons per day per person. No other factors were applied.

Table 8 provides an analysis of the population projection for the listed urban municipality through the next 20 years. It is anticipated that the spread of wastewater flows between residential, commercial and industrial flows within the county will generally remain the same. However, it is likely industrial flows will slightly decrease and be shifted to residential and commercial as large partially abandoned industrial facilities are redeveloped as residential or flex space office/light warehouse space, a currently common trend throughout New Jersey.

Table 8. 20 Year Population Projection

Municipality	Current (2013)	20 years	% Change
Caldwell Borough	7,877	8,271	+5.0
Cedar Grove Township	12,555	13,568	+8.1
Essex Fells Borough	2,158	2,511	+16.3
Fairfield Township	7,556	8,152	+7.9
Livingston Township	29,718	32,142	+8.2
North Caldwell Borough	6,247	6,714	+7.5
Roseland Borough	5,887	6,350	+7.9
Verona Township	13,461	14,368	+6.7
West Caldwell Township	10,884	11,751	+8.0

Future Wastewater Outside of Sewer Service Areas

The default wastewater management alternative to support development in areas that are not designated as sewer service areas is discharge to groundwater of 2,000 gallons per day or less. There is no proposed area within Essex County designated for sewer service by septic systems. Accordingly, nitrate dilution modeling using 2 mg/L N as the surrogate was not performed. Should development desire to occur in such a way within Essex County, an amendment to this Wastewater Management Plan will be necessary which will require the analysis designated by the Water Quality Management Rules in effect at that time.

Areas located within the watershed of a Freshwater One (FW1) stream, as classified in the Surface Water Quality Standards, and/or that have Class 1-A ground water (Ground Water of Special

Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water area based on the Surface Water Quality Standards at N.J.A.C. 7:9B and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6". Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions including, but not limited to, the following: 1) DEP will not approve any pollutant discharge to ground water nor approve any human activity which results in a degradation of natural quality except for the upgrade or continued operation of existing facilities serving existing development. For additional information please see the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6.

VI. Analysis of Capacity to Meet Future Wastewater Needs

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 sewer service areas this requires 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. Where a sewage treatment plant does not have sufficient remaining capacity to meet the future wastewater needs of the service area three possible solutions exist: 1) reduce the proposed sewer service area, 2) reduce the intensity of development within the sewer service area or 3) demonstrate that the sewage treatment plant can be expanded without violating water quality standards.

Table 9 provides a breakdown of future wastewater demands by service area and by general development category for the County, based on the development projections provided above. Based on the analyses, there is adequate capacity for the projected flows at all of the wastewater treatment facilities in Essex County.

Table 9. Future Wastewater Planning Flows By Facility or General Service Area						
Domestic Wastewater Treatment Facility or General Service Area	**Facility Permitted Flow (MGD)**	**Existing Flows (MGD)**	**Projected Residential Flow (MGD)**	**Projected Commercial Flow (MGD)**	**Total Future Planning Flows (MGD) – Year 2033**	**Excess (Deficit) Facility Capacity (MGD)**
Cedar Grove WWTP	2.0	1.210	0.027	0.011	1.248	0.752
Verona STP	3.0	1.401	0.151	0.011	0.163	1.436
Livingston WPCF	4.6	2.868	0.182	0.038	0.220	1.512
Caldwell STP	4.5	4.088	0.154	0.043	0.197	0.215
General Area for Service by Septic Systems	None	Unknown	None	None	None	None

Table 10 further separates the countywide projections by sewage treatment facility and municipality. Details of the projections are included within the municipal chapters, which also address any needs for new or expanded treatment facility discharges.

Table 10. Wastewater Generation by Sewage Treatment Facility and Municipality

Facility	NJPDES Permit	Facility Type (DGW/DSW)	Municipality	Projected Build-out Flow (MGD)
Cedar Grove WWTP	NJ0025330	DSW		**0.038**
			Cedar Grove	0.038
Verona STP	NJ0024490	DSW		**0.163**
			Verona	0.079
			West Orange	0.001
			Cedar Grove	0.049
			North Caldwell	0.032
Livingston WPCF	NJ0024511	DSW		**0.220**
			Livingston	0.220
Caldwell STP	NJ0020427	DSW		**0.197**
			West Caldwell	0.071
			North Caldwell	0.010
			Caldwell	0.033
			Roseland	0.052
			Essex Fells	0.030
			Fairfield	0
			Verona	0
			West Orange	0
			Livingston	0

**numbers may not add due to rounding*

Capacities have been determined to be adequate for future wastewater flows. In addition, both the municipalities and Authorities have the ability to commit to the reduction of infiltration and inflow to further ensure capacity viability.

The facilities tables in **Appendix C** provide detailed information on the planning flows for each treatment facility.

Analysis and Selection of Treatment Alternatives

Capacities have been determined to be adequate for future wastewater flows. In addition, each of the municipalities and Authorities have the ability to commit to reduction infiltration and inflow to further ensure capacity viability.

Relationship to Water Quality Classification

New and expanded discharges will not be permitted in FW1 surface waters or Class I-A ground waters. New and expanded discharges that would degrade current water quality will not be permitted in FW2-Category 1 surface waters. New and expanded discharges to FW2-Category 2 surface waters and Class II-A ground waters may be permitted subject to an analysis of their potential to degrade water quality, the justification for doing so, opportunities for avoiding such degradation, and an overriding requirement that any degradation may not be allowed to violate or increase the violation of standards.

Additional requirements for new or expanded treatment works or increased pollutant loads will be applied through the NJDEP regulatory process, including but not limited to compliance with anti-degradation requirements of the Surface Water Quality Standards, NJAC 7:9B, and the Ground Water Quality Standards, NJAC 7:9C. Most stringent of these are the non-degradation requirements. Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions including, but not limited to, the following: 1) DEP will not approve any pollutant discharges to an FW1 stream, with the exception of upgrades to or continued operation of existing facilities serving existing development. 2) DEP will not approve any pollutant discharge to ground water nor approve any human activity which results in a degradation of natural quality except for the upgrade or continued operation of existing facilities serving existing development. For additional information please see the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9C.

Discharges to Ground Water

There is no proposed area within Essex County designated for sewer service by septic systems. Accordingly, nitrate dilution modeling using 2 mg/L N as the surrogate was not performed. Should development desire to occur in such a way within Essex County, an amendment to this Wastewater Management Plan will be necessary which will require the analysis designated by the Water Quality Management Rules in effect at that time.

Adequacy of dilution to meet future non-sewer service area demand

There is no proposed area within Essex County designated for sewer service by septic systems. Accordingly, nitrate dilution modeling using 2 mg/L N as the surrogate was not performed. Should development desire to occur in such a way within Essex County, an amendment to this Wastewater Management Plan will be necessary which will require the analysis designated by the Water Quality Management Rules in effect at that time.

Compliance with Environmental Protection Standards

The County WMP must ensure that proposed wastewater service areas are in the proper areas and will minimize or eliminate primary and secondary environmental impacts. The identification of appropriate wastewater service areas begins with the analysis of environmentally sensitive areas discussed above. Added to this result is the build-out analyses. The result is a determination of what areas are both zoned for and appropriate for community sewer service, and which areas are

not appropriate for sewers due to zoning, environmentally sensitive areas, or both. The WQMP rules require that development densities and aggregated demands or impacts remain within thresholds. Where the thresholds are exceeded, either the size or development density of a sewer service area or the development density of a non-sewered area must be reduced, or the impact must be mitigated. This plan has demonstrated compliance with these capacity constraints.

However, there are other environmental considerations regarding pollutant loadings, water supply and other factors. In some cases (e.g., riparian zones and steep slopes) the WQMP rules require that municipal ordinance ensure protection of these areas regardless of their wastewater service area. Further, the WQMP rules establish that avoidable development within these areas is inconsistent with the Statewide Water Quality management plans and the Department cannot issue any permits or approvals for development of these areas. **Table 11** below provides the status of adoption of the required municipal ordinances.

TMDLs and Watershed Restoration/Regional Stormwater Management Plans

The Passaic River Coalition is active in facilitating solutions for flood projection, enhancing recreation and natural areas, water supply management and water quality improvements.

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, with applicable ordinances provided in Appendices E through K. The County has requested that each municipality provide evidence that the Model Ordinances have been adopted.

Table 11. Status of Municipal Ordinances and Master Plan*

Municipality	Master Plan	Zoning Ordinance	Stormwater Ordinance (Groundwater Recharge Maintenance)	Riparian Zone Ordinance	Steep Slope Ordinance	Septic System Maintenance	Dry Conveyances in Sewer Service Areas	Septic Connection in Sewer Service Areas
Belleville	Y	Y	Y	N	N	N	N	N
Bloomfield	Y	N	Y	N	Y	N	N	N
Caldwell	N	N	Y	N	N	N	N	N
Cedar Grove	N	N	Y	N	N	N	N	N
Orange	N	N	Y	N	N	N	N	N
East Orange	Y	Y	Y	N	N	N	N	N
Essex Fells	N	N	Y	N	N	N	N	N
Fairfield	Y	Y	Y	N	N	N	N	N
Glen Ridge	Y	Y	Y	N	N	N	N	N
Irvington	N	Y	Y	N	N	N	N	N
Livingston	Y	Y	Y	N	N	N	N	N
Maplewood	Y	Y	Y	N	N	N	N	N

Millburn	Y	Y	Y	Y	Y	N	N	N
Montclair	Y	Y	Y	N	N	N	N	N
Newark	Y	Y	Y	N	N	N	N	N
North Caldwell	N	Y	Y	N	N	N	N	N
Nutley	Y	Y	Y	N	N	N	N	N
Roseland	Y	Y	Y	N	N	N	N	N
South Orange	N	Y	Y	N	N	N	N	N
Verona	Y	Y	Y	N	N	N	N	N
West Caldwell	Y	Y	Y	N	N	N	N	N
West Orange	Y	Y	Y	Y	Y	N	N	N

**Y means that the master plan is within its 6 year update period, or that the ordinance has been adopted and is in compliance with NJAC 7:15.*

VII. Future County Water Supply Availability

Sufficiency of Water Supply

Pursuant to N.J.A.C. 7:15-5.25(f), a water supply analysis is required to demonstrate that the water supply needs associated with existing and future development do not conflict with the current New Jersey State Water Supply Plan (adopted August 1996). A water supply demand analysis was performed for each of the unconsolidated municipalities and is provided in each municipal chapter. Generally, projected water demands were based on the NJTPA population projections for each municipality and various water demand factors per capita. Projected Residential Average Daily Demand (ADD) was calculated according to the State of NJ Division of Consumer Affairs (DCA's) Residential Site Improvement Standards (RSIS), N.J.A.C. 5:21-5.2(d) at 100 gpd/capita. Non-residential ADD was based on N.J.A.C. 7:10-12.6(b) for office space, Table 1:

- 0.125 gpd/SF; and
- Office space is 250 SF per employee per the "Building Owners and Managers Association Guidelines" (BOMA) Standard Method for Measuring Office Floor Area

Therefore, non-residential ADD is estimated at:

(0.125 gpd/SF)*(250 SF/employee) = 31.25 gpd/employee

Table 12 provides a summary of the water supply sufficiency.

Table 12. Summary of Future Water Demands by Water Department						
	2013		Future Development		2033	
Water Department	**Firm Capacity Deficit/Surplus (MGD)**	**Water Supply Deficit/Surplus (MGM)**	**Peak Day Demand (MGD)**	**Peak Month Demand (MGM)**	**Firm Capacity Deficit/Surplus (MGD)**	**Water Supply Deficit/Surplus (MGM)**
Caldwell	0.396	8.884	0.132	2.052	0.264	6.832
Cedar Grove	-0.23	-6.64	0.345	5.348	-0.575	-11.988
Essex Fells	0.846	20.809	0.120	1.855	0.726	18.954
Fairfield	0.460	14.250	0.228	3.536	0.232	10.714
Livingston	-0.727	-12.142	0.869	13.466	-1.596	-25.608
North Caldwell	-0.656	-19.972	0.153	2.375	-0.809	-22.347
Roseland	-1.365	-42.300	0.203	3.140	-1.568	-45.440
Verona	0.044	29.995	0.315	4.883	-0.271	25.112
West Caldwell	0.784	14.789	0.315	4.883	0.469	9.906

Sufficiency of Water Supply

It is noted that any deficit shown is more of a water supply contract matter than a real supply deficit, but should still be addressed. Regional water supplies should be sufficient to cover the municipal water demands subject to the necessary agreements being executed.

VIII. Municipal Wastewater Management Chapters

Municipality	Included
Belleville	Yes
Bloomfield	Yes
Caldwell	Yes
Cedar Grove	Yes
Orange	Yes
East Orange	Yes
Essex Fells	Yes
Fairfield	Yes
Glen Ridge	Yes
Irvington	Yes
Livingston	Yes
Maplewood	Yes
Millburn	Yes
Montclair	Yes
Newark	Yes
North Caldwell	Yes
Nutley	Yes
Roseland	Yes
South Orange	Yes
Verona	Yes
West Caldwell	Yes
West Orange	Yes

Township of Belleville

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

The Township of Belleville is located within the Passaic Valley Sewer Commission service area (NJ0021016) and, thus, is addressed in the Passaic Valley Sewer Commission Wastewater Management Plan approved on December 8, 2008.

Township of Bloomfield

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

The Township of Bloomfield is located within the Passaic Valley Sewer Commission service area (NJ0021016) and, thus, is addressed in the Passaic Valley Sewer Commission Wastewater Management Plan approved on December 8, 2008.

Borough of Caldwell

Introduction

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

The Borough of Caldwell is located in northwestern Essex County and it has a total area of 1.17 square miles. Caldwell was incorporated as a borough in 1892, from portions of Caldwell Township (now Fairfield Township). Grover Cleveland Park, part of the Essex County Department of Parks, Recreation and Cultural Affairs (also known as the Essex County Park System), is partially located in the southern part of the Borough. The remaining land within the Borough consists mainly of residential uses with a small portion along Bloomfield Avenue zoned for business and office/professional use. The Borough zoning designations are shown on **Map 10**.

The Census Bureau population count for Borough of Caldwell was 7,820 in 2010 (extrapolated to 7,877 in 2013). In year 2000, the population was 7,584; therefore the Township population has grown by approximately 3.9% over the last 13 years.

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

- Borough of Caldwell is considered an urbanized municipality.
- The municipality is not located within the Highlands Region.

Existing Infrastructure

The existing wastewater collection and conveyance infrastructure within this municipality consists of the following:

- Collection System – Borough of Caldwell is generally developed throughout its borders with the exception of open space. The Borough's wastewater collection system includes over 18 miles of gravity sewer. The wastewater collection system conveys sewage to both the Caldwell Sewage Treatment Plant (STP; NJ0020427) located in West Caldwell Township and the Verona STP (NJ0025330).
- Pumping Stations – The wastewater collection system also includes one (1) pump station within the Caldwell Borough borders.

There are no existing major wastewater treatment facilities located within the municipality. Further, there are no minor facilities that discharge to surface water (DSW) or groundwater (DGW).

Environmental and Other Land Features

The countywide Environmental Features are shown on **Maps 4** through **9**.

The southern portion of the Borough includes a portion of Grover Cleveland Park. The Borough contains some surface water, riparian areas and some steep slope areas. There are a small amount of wetlands and flood prone areas present in the southern portion of the Borough.

Delineation of Service Areas and Planning Integration

Sewer Service Areas

The existing areas served and future SSAs within Borough of Caldwell are shown on **Maps 1** and **11**, respectively. Wastewater in the Township is conveyed to the Caldwell STP with a small portion on the eastern border of the Township conveyed to the Verona STP. The facilities providing treatment to this service area have associated facilities tables in **Appendix C**.

General Service Area

General Service Areas (GSAs) consist of those areas with discharges to groundwater of less than 2,000 gallons per day (i.e. individual subsurface sewage disposal systems a/k/a residential septic systems) that are neither designated for sewer service nor as non-discharge areas. A general service area for individual subsurface sewage disposal systems has not been established in Caldwell.

Non-discharge areas are areas where additional wastewater generation and/ or discharge are prohibited. In the Borough of Caldwell, non-discharge areas include Grover Cleveland Park, as delineated on **Maps 1** and **11**.

Coordination and Compliance with the New Jersey Highlands Regional Master Plan

Borough of Caldwell is not located within the New Jersey Highlands Region.

Significant Actions

There are no significant actions proposed as a part of this WMP.

Future Wastewater Demand and Facilities

It is noted that all municipalities within Essex County are considered urbanized for the purposes of this WMP. As such, it is appropriate to evaluate future growth in the SSAs using governmental and/or institutional projected demographic data rather than evaluate remaining undeveloped lands. For the Borough of Caldwell, in order to evaluate capacity and future sanitary flow rates, a build-out projection was made using 20-year projections for both residential population growth and labor force growth. Data for these projections was obtained from the North Jersey Transportation Planning Authority (NJTPA) municipal forecasts approved on September 10, 2013 and is provided in **Appendix M**.

Based on the calculated 20-year population figures, estimated residential and non-residential wastewater flows were calculated based on the following:

Residential build-out flows are based on the Water Quality Management Plan rules published in NJAC 7:15. These rules direct urban based build-outs to use **75 gpd/capita** for residential sewage.

Non-residential build-out flows were based on the following:

- 0.1 gpd/SF per NJAC 7:14A-23.1; and
- Office space is 250 SF per employee per the "Building Owners and Managers Association Guidelines" (BOMA) Standard Method for Measuring Office Floor Area

Therefore, non-residential sewage is estimated at:

(0.1 gpd/SF)*(250 SF/employee) = **25 gpd/employee**

Sewer Service Area Wastewater Capacity Analysis

Table 1 presents the results of the Build-out Analysis for Borough of Caldwell. The table identifies the current NJDPES permit flow of the Caldwell STP at 4.6 MGD. The most current 12 months of existing STP monthly average 30-day flow is 4.088 MGD, based upon flow data from December 2012 through November 2013 (from NJDEP). It is unknown if there are any Treatment Works Approvals (TWAs) approved by NJDEP for unconnected projects within the Borough of Caldwell, so the only other anticipated future flow is based upon the 20-year projection described above.

Caldwell's residential population is anticipated to increase by 394 people in the next 20 years. At 75 gpd/capita, this equates to 0.030 MGD. Caldwell's employment population is anticipated to increase by 151 in the next 20 years. At 25 gpd/employee, this equates to 0.004 MGD. The total projected build-out flow (from new projected development) is noted in **Table 1** as 0.033 MGD.

It is noted that three areas of Caldwell along the eastern border of the Borough are tributary to the Verona STP. Based on a review of the lots, it appears that these areas are already built-out and no additional development will occur in these areas.

Refer to the Borough of West Caldwell chapter regarding total tributary build-out flows vs. Caldwell STP capacity.

Table 1: Borough of Caldwell Build-out Table (SSAs)

Wastewater Treatment Facility			Build-out Flow				WWTP	
Major Public Wastewater Treatment Facility	**Capacity Allocation/ Permitted Capacity (mgd)**	**Total Existing Flow (mgd)**	**Total Flow Attributed to TWAs Approved But Unconnected (mgd)**	**Caldwell Residential Build-out Flow (mgd)**	**Caldwell Non-Residential Build-out Flow (mgd)**	**Total Caldwell Projected Build-out Flow (mgd)**	**Total Projected 2033 Flow (mgd)**	**Remaining Capacity (mgd)**
Caldwell STP	4.5	4.0875[1]	0	0.034	0.004	0.038	n/a	n/a

[1] This is the current 12 month annual average for 12/1/12 to 11/30/13.

Note: Municipalities tributary to the Caldwell STP include Borough of Caldwell, Borough of Roseland, Borough of Essex Fells, Borough of North Caldwell, Township of West Caldwell, Township of Fairfield, Township of Verona and Township of West Orange. Refer to the Borough of West Caldwell chapter (Table 1) regarding total tributary build-out flows vs. Caldwell STP capacity.

General Service Area Wastewater Capacity Analysis

Various minimum lot areas are required for a single dwelling unit, or other development within the Borough of Caldwell dependent on zoning. N.J.S.A. 58: 11-25 of the Realty Improvement Sewerage and Facilities Act grants the approval for construction and installation of an Individual Subsurface Sewage Disposal System (ISSDS) by the local Administrative Authority. As provided under N.J.A.C. 7:9A the standards for the proper location, design, and minimum separation distance between the various components of the system and the other features would render the local approval for the construction of an ISSDS on smaller lots exceedingly difficult. As the use of ISSDS as an onsite treatment alternative may not be permissible on the minimum lot size parcels within the Borough of Caldwell, the Department has recognized the stated intent of the Borough of Caldwell is to provide sewer service within the entire designated planning area to the maximum extent allowable under the conformance of federal waiver or mapping revision process. Consequently, all proposed subdivisions resulting in six (6) or more dwelling units within those areas of the Borough of Caldwell that are outside of the proposed sewer service area shall require an amendment. As part of the amendment review process, the analysis to evaluate the groundwater impacts and septic systems density must be conducted. As a result, the Nitrate Dilution Model analysis was not required as part of the review of the Essex County WMP.

Water Supply Demand

Pursuant to N.J.A.C. 7:15-5.25(f), a water supply analysis is required to demonstrate that the water supply needs associated with existing and future development do not conflict with the current New Jersey State Water Supply Plan. The current New Jersey State Water Supply Plan was adopted in August 1996.

The Borough of Caldwell purchases water from Essex Fells (NJ0706001), who buys water from the New Jersey American Water Company – Short Hills (NJAWC; NJ0712001), for a total monthly limit (contract amount) of 40.000 MGM. Caldwell has a firm capacity of 1.400 MGD. Firm capacity is defined as “adequate pumping equipment and/or treatment capacity (excluding coagulation, flocculation, and sedimentation) to meet peak daily demand when the largest pumping station or treatment unit is out of service.” The existing total peak daily demand (including committed peak) is 1.004 MGD, where committed peak is calculated as follows:

[(Projected Residential average daily demand) + (Projected Non-residential average daily demand)] * 3.0

where:

Projected Residential Average Daily Demand (ADD) was calculated according to the State of NJ Division of Consumer Affairs (DCA’s) Residential Site Improvement Standards (RSIS), N.J.A.C. 5:21-5.2(d) at **100 gpd/capita**.

Non-residential ADD was based on N.J.A.C. 7:10-12.6(b) for office space, Table 1:

- 0.125 gpd/SF; and

- Office space is 250 SF per employee per the "Building Owners and Managers Association Guidelines" (BOMA) Standard Method for Measuring Office Floor Area

Therefore, non-residential ADD is estimated at:

(0.125 gpd/SF)*(250 SF/employee) = **31.25 gpd/employee**

Caldwell's residential population is anticipated to increase by 394 people in the next 20 years. At 100 gpd/capita, this equates to 0.039 MGD. Caldwell's employment population is anticipated to increase by 151 in the next 20 years. At 31.25 gpd/employee, this equates to 0.005 MGD. Therefore, the total projected build-out ADD is estimated at 0.044 MGD.

For the purposes of water supply projections, the NJDEP uses a greater per capita flow than RSIS. These different per capita flow rates account for the difference in sewer and water projections within this chapter.

According to the NJDEP Public Water System Deficit/Surplus Analysis (updated December 2013) the Borough of Caldwell currently has a water supply surplus of 8.884 MGM and a firm capacity surplus of 0.396 MGD. In order to update the water supply and firm capacity surplus/deficit for future demands, multipliers were applied to the projected build-out ADD in accordance with the NJDEP Firm Capacity and Water Allocation Analysis as follows:

Firm Capacity Surplus/Deficit Calculation:

Assuming the future development as "committed peak," a peaking factor of 3.0 was applied to the projected build-out ADD. **Table 2** shows Peak Demand due to Future Development at 0.132 MGD. [0.044 MGD * 3.0 = 0.132 MGD]

The projected peak daily demand (0.132 MGD) was added to the existing peak daily demand (1.004 MGD)and then subtracted from the existing firm capacity (1.400 MGD) to calculate the firm capacity surplus/deficit (0.396 MGD surplus).

Water Supply Surplus/Deficit Calculation:

Assuming the future development as "committed peak," a peaking factor of 1.5 was applied to the projected build-out ADD and then multiplied by 31 days. **Table 2** shows Peak Demand due to Future Development at 2.052 MGD. [0.044 MGD * 1.5 * 31 = 2.052 MGM]

The projected peak monthly demand (2.052 MGM) was added to the existing peak monthly demand (31.116 MGM) and then subtracted from the existing contract limit (40.000 MGM) to calculate the water supply surplus/deficit (6.832 MGM surplus).

Therefore, based on the information in **Table 2** below, there is no information indicating that there would be a shortage of water supply. Further, there are no significant water supply issues identified in the current State Water Supply Plan for the planning areas impacting Passaic County." It is noted that a new contract with Essex Fells was approved on June 5, 2013 and will expire on January 30,

2020. Refer to **Appendix N** for the Caldwell Water Department NJDEP Public Water System Deficit/Surplus Analysis.

Table 2 – Borough of Caldwell Water Supply Demand by PWSID

PWSID	Purveyor	Contract Limit (MGM)	Firm Capacity (MGD)	Peak Daily Demand (MGD)	Total Peak Monthly Demand (MGM)	Firm Capacity Deficit/Surplus (MGD)	Water Supply Deficit/Surplus (MGM)	Year
0703001	Caldwell Water Dept.	40.000	1.400	1.004[1]	31.116[1]	0.396	8.884	2013
Peak Demand Due to Future Development (MGD)				0.132	2.052			
				1.136	33.168	0.264	6.832	2033

[1]Peak Daily Demand and Total Peak Monthly Demand have been obtained from the NJDEP Division of Water Supply and Geoscience website (refer to appendix). For conservative purposes, the committed peak flows have been included in the existing condition. It may be possible that a portion of this committed peak should be included in the future development values in this table.

Model Ordinances

Table 3 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.

Table 3 – Summary of Ordinance Adoption

Ordinance	**Date Adopted**	**Complies with NJAC 7:15**	**Comments and More Protective Standards**
Stormwater Management (Ground Water Recharge Maintenance)	2004-2009	YES	NO
Riparian Zone Protection	NO	NO	NO
Steep Slope Protection	NO	NO	NO
Septic System Maintenance	NO	NO	NO
Dry Conveyances in Sewer Service Area	NO	NO	NO
Septic Connection in Sewer Service Area	NO	NO	NO

Cedar Grove Township

Introduction

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

Cedar Grove Township was originally a part of Verona Township until the name was changed to Cedar Grove in 1908. Cedar Grove Township is located in the northern portion of Essex County and encompasses approximately 4.4 square miles. The Township is home to portions of the Hilltop and Mill Reservations both part of the Essex County Department of Parks, Recreation and Cultural Affairs (also known as the Essex County Park System). There are several other parks, most notably the Cedar Grove Community Park, located in the center of the Township. The remaining land within the Township consists mainly of residential uses with a portion zoned for business, commercial and light and limited industrial use. The light and limited industrial zones are generally located in the northern part of the Township, with the restricted and limited commercial districts generally being located along Route 23. The Township zoning designations are shown on **Map 10**.

The Census Bureau population count for Cedar Grove Township was 12,411 in 2010 (extrapolated to 12,555 in 2013). In year 2000, the population was 12,300; therefore the Township population has grown by approximately 2% over the last 13 years.

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

- Cedar Grove Township is considered an urbanized municipality.
- The municipality is not located within the Highlands Region.

Existing Infrastructure

The existing wastewater collection and conveyance infrastructure within this municipality consists of the following:

- Collection System & Pump Stations – Cedar Grove Township is generally developed throughout its borders with the exception of open space and some areas containing steep slopes. The Township's wastewater collection system includes over 46 miles of gravity sewer and force main. The Township's wastewater collection system conveys sewage to the Cedar Grove Wastewater Treatment Plant (WWTP; NJ0025330). The collection system exclusively serves the Township of Cedar Grove. The wastewater collection system also includes three (3) pump stations.
- Collection System (outside service providers) – a small portion of the Township's wastewater along the southern border is conveyed to the Verona STP (NJ0024490). This area largely includes the Essex County Hospital grounds in addition to several other unrelated parcels.

Two additional small areas on the northern border are conveyed to the Passaic Valley Sewer Commission (NJ0021016).

The existing major wastewater treatment facilities located within the municipality include:

- Cedar Grove Township Wastewater Treatment Plant (WWTP) – The Township's WWTP is permitted for 2.0 million gallons per day (MGD). The plant outfall is located on the Peckman River.

Table 1 presents additional minor facilities that discharge to surface water (DSW) in Cedar Grove Township. These facilities are regulated through NJDEP and have individual New Jersey Pollutant Discharge Elimination System (NJPDES) discharge permits. There are no facilities that discharge to groundwater. The existing treatment facilities are illustrated on **Map 1**.

Table 1: Additional NJPDES (DSW) Minor Permitted Facilities within Cedar Grove Township

NJPDES Permit Number	Facility Name	Permit Program Code	Receiving Stream or Aquifer	Classification	Contact Organization Name	Block	Lot	Permitted Flow (mgd)	Existing Flow[1] (mgd)	Future Flow[1] (mgd)	Discharge Category
NJ0027847	Servometer Corporation	SW	Peckman River	FW2-NT	Servometer	370 371	102 1	0.0018	0.0010	0.0010	Minor Wastewater

[1]Flow indicated is monthly average flow

Environmental and Other Land Features

The countywide Environmental Features are shown on **Maps 4** through **9**.

The 1st Watchung Mountain forms the eastern border of the Township. Accordingly, there are steep slopes present along this mountain, in addition to the 2nd Watchung Mountain, which is present in the western part of the Township. A portion of the Hilltop Reservation is located in the southwestern portion of the Township and the Mills Reservation is located in the northeastern portion of the Township to the east and southeast of the Cedar Grove Reservoir. Both of these open spaces are part of the Essex County Parks system. In addition, there are some riparian areas, wetlands and flood prone areas along the Peckman River and south of the Cedar Grove Reservoir.

Delineation of Service Areas and Planning Integration

Sewer Service Areas

The existing areas served and future SSAs within Cedar Grove Township are shown on **Maps 1** and **11**, respectively. Wastewater treatment within the Township is predominantly provided by the Cedar Grove Township WWTP. There is one additional service area that is served by the Verona STP and two areas that are served by PVSC. The facilities providing treatment to this service area have associated facilities tables in **Appendix C.**

General Service Area

General Service Areas (GSAs) consist of those areas with discharges to groundwater of less than 2,000 gallons per day (i.e. individual subsurface sewage disposal systems a/k/a residential septic systems) that are neither designated for sewer service nor as non-discharge areas. A general service area for individual subsurface sewage disposal systems has not been established in Cedar Grove.

Non-discharge areas are areas where additional wastewater generation and/ or discharge are prohibited. In Cedar Grove Township, non-discharge areas include the Hilltop and Mills Reservations. Non-discharge areas are delineated on **Maps 1** and **11**.

Coordination and Compliance with the New Jersey Highlands Regional Master Plan

Cedar Grove Township is not located within the New Jersey Highlands Region.

Significant Actions

The Cedar Grove Township WWTP at 340 Little Falls Road currently discharges into the Peckman River and is regulated under NJPDES Permit No. NJ0025330. In general, the existing Cedar Grove Township WWTP will continue to operate and treat flow tributary to the existing collection system. There are no significant actions proposed in this Wastewater Management Plan.

Future Wastewater Demand and Facilities

It is noted that all municipalities within Essex County are considered urbanized for the purposes of this WMP. As such, it is appropriate to evaluate future growth in the SSAs using governmental and/or institutional projected demographic data rather than evaluate remaining undeveloped lands. For Cedar Grove Township, in order to evaluate capacity and future sanitary flow rates, a build-out projection was made using 20-year projections for both residential population growth and labor force growth. Data for these projections was obtained from the North Jersey Transportation Planning Authority (NJTPA) municipal forecasts approved on September 10, 2013 and is provided in **Appendix M**. Based on the calculated 20-year population figures, estimated residential and non-residential wastewater flows were calculated based on the following:

Residential build-out flows are based on the Water Quality Management Plan rules published in NJAC 7:15. These rules direct urban based build-outs to use **75 gpd/capita** for residential sewage.

Non-residential build-out flows were based on the following:

- 0.1 gpd/SF per NJAC 7:14A-23.1; and
- Office space is 250 SF per employee per the "Building Owners and Managers Association Guidelines" (BOMA) Standard Method for Measuring Office Floor Area

Therefore, non-residential sewage is estimated at:

(0.1 gpd/SF)*(250 SF/employee) = **25 gpd/employee**

Sewer Service Area Wastewater Capacity Analysis

Table 2 presents the results of the Build-out Analysis for Cedar Grove Township. The table identifies the current NJDPES permit flow of the Cedar Grove Township WWTP at 2.0 MGD. The most current 12 months of existing WWTP monthly average 30-day flow is 1.210 MGD, based upon flow data from December 2012 through November 2013 (from NJDEP). It is unknown if there are any Treatment Works Approvals (TWAs) approved by NJDEP for unconnected projects within Cedar Grove Township, so the only other anticipated future flow is based upon the 20-year projection described above.

Cedar Grove's residential population is anticipated to increase by 1,013 people in the next 20 years. However, a portion of that population increase can be attributed to an area of Cedar Grove that is tributary to the Verona SSA. Based on vacant land and the existing zoning in the Verona SSA, it is estimated that an additional 654 people will be served by the Verona STP at buildout. There is no projected population or flow increase in the Township tributary to PVSC. Accordingly, subtracting 654 people from 1,013 people yields an estimated population growth of 359 in the Cedar Grove SSA. At 75 gpd/capita, this equates to 0.027 MGD.

Cedar Grove's employment population is anticipated to increase by 430 in the next 20 years. This is growth projected in the Cedar Grove Township's WWTP SSA only, as there is no employment growth

projected tributary to PVSC. At 25 gpd/employee, this equates to 0.011 MGD. The total projected build-out flow (from new projected development) is noted in **Table 2** as 0.038 MGD.

Based upon the foregoing, the buildout analysis shows the 20-year buildout flow (the total of the existing Cedar Grove WWTP flows and projected build-out flow) is 1.248 MGD. When compared to the current NJPDES permit capacity of the Cedar Grove WWTP of 2.0 MGD, the analysis demonstrates a capacity surplus of 0.752 MGD.

Table 2: Cedar Grove Township Build-out Table (SSAs)

Wastewater Treatment Facility			Build-out Flow				WWTP	
Major Public Wastewater Treatment Facility	**Capacity Allocation/ Permitted Capacity (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)**	**Total Projected Build-out Flow (mgd)**	**Total Projected 2033 Flow (mgd)**	**Remaining Capacity (mgd)**
Cedar Grove WWTP	2.0	1.210[1]	0	0.027	0.011	0.038	1.248	0.752

[1] This is the current 12 month annual average for 12/1/12 to 11/30/13.

Note: A separate portion of the build-out flow is tributary to the Verona STP and is included in the Verona Chapter. The flows in the above table are all tributary to the Cedar Grove WWTP.

Based on **Table 2**, the Cedar Grove Township WWTP has sufficient wastewater treatment capacity to match the expected build-out potential within the Township.

General Service Area Wastewater Capacity Analysis

Various minimum lot areas are required for a single dwelling unit, or other development within Cedar Grove Township dependent on zoning. N.J.S.A. 58: 11-25 of the Realty Improvement Sewerage and Facilities Act grants the approval for construction and installation of an Individual Subsurface Sewage Disposal System (ISSDS) by the local Administrative Authority. As provided under N.J.A.C. 7:9A the standards for the proper location, design, and minimum separation distance between the various components of the system and the other features would render the local approval for the construction of an ISSDS on smaller lots exceedingly difficult. As the use of ISSDS as an onsite treatment alternative may not be permissible on the minimum lot size parcels within Cedar Grove Township, the Department has recognized the stated intent of Cedar Grove Township is to provide sewer service within the entire designated planning area to the maximum extent allowable under the conformance of federal waiver or mapping revision process. Consequently, all proposed subdivisions resulting in six (6) or more dwelling units within those areas of Cedar Grove Township that are outside of the proposed sewer service area shall require an amendment. As part of the amendment review process, the analysis to evaluate the groundwater impacts and septic systems density must be conducted. As a result, the Nitrate Dilution Model analysis was not required as part of the review of the Essex County WMP.

Water Supply Demand

Pursuant to N.J.A.C. 7:15-5.25(f), a water supply analysis is required to demonstrate that the water supply needs associated with existing and future development do not conflict with the current New Jersey State Water Supply Plan. The current New Jersey State Water Supply Plan was adopted in August 1996.

Cedar Grove's water supply is treated surface water purchased from both the North Jersey District Water Supply Commission (NJDWSC; NJ1613001) and the Passaic Valley Water Commission (PVWC; NJ1605002)) for a total monthly limit (contract amount) of 60.14 MGM. Cedar Grove has a firm capacity of 1.940 MGD. Firm capacity is defined as "adequate pumping equipment and/or treatment capacity (excluding coagulation, flocculation, and sedimentation) to meet peak daily demand when the largest pumping station or treatment unit is out of service." The existing total peak daily demand (including committed peak) is 2.170 MGD, where committed peak is calculated as follows:

[(Projected Residential average daily demand) + (Projected Non-residential average daily demand)] * 3.0

where:

Projected Residential Average Daily Demand (ADD) was calculated according to the State of NJ Division of Consumer Affairs (DCA's) Residential Site Improvement Standards (RSIS), N.J.A.C. 5:21-5.2(d) at **100 gpd/capita**.

Non-residential ADD was based on N.J.A.C. 7:10-12.6(b) for office space, Table 1:

- 0.125 gpd/SF; and
- Office space is 250 SF per employee per the "Building Owners and Managers Association Guidelines" (BOMA) Standard Method for Measuring Office Floor Area

Therefore, non-residential ADD is estimated at:

(0.125 gpd/SF)*(250 SF/employee) = **31.25 gpd/employee**

Cedar Grove's residential population is anticipated to increase by 1,013 people in the next 20 years. At 100 gpd/capita, this equates to 0.101 MGD. Cedar Grove's employment population is anticipated to increase by 430 in the next 20 years. At 31.25 gpd/employee, this equates to 0.013 MGD. Therefore, the total projected build-out ADD is estimated at 0.115 MGD.

For the purposes of water supply projections, the NJDEP uses a greater per capita flow than RSIS. These different per capita flow rates account for the difference in sewer and water projections within this chapter.

According to the NJDEP Public Water System Deficit/Surplus Analysis (updated June 2013) Cedar Grove currently has a water supply deficit of 6.640 MGM and a firm capacity deficit of 0.230 MGD. In order to update the water supply and firm capacity surplus/deficit for future demands, multipliers were applied to the projected build-out ADD in accordance with the NJDEP Firm Capacity and Water Allocation Analysis as follows:

Firm Capacity Surplus/Deficit Calculation:

Assuming the future development as "committed peak," a peaking factor of 3.0 was applied to the projected build-out ADD. **Table 3** shows Peak Demand due to Future Development at 0.345 MGD. [0.115 MGD * 3.0 = 0.345 MGD]

The projected peak daily demand (0.345 MGD) was added to the existing peak daily demand (2.170 MGD)and then subtracted from the existing firm capacity (1.940 MGD) to calculate the firm capacity surplus/deficit (0.575 MGD deficit).

Water Supply Surplus/Deficit Calculation:

Assuming the future development as "committed peak," a peaking factor of 1.5 was applied to the projected build-out ADD and then multiplied by 31 days. **Table 3** shows Peak Demand due to Future Development at 5.348 MGD. [0.115 MGD * 1.5 * 31 = 5.348 MGM]

The projected peak monthly demand (5.348 MGM) was added to the existing peak monthly demand (66.780 MGM) and then subtracted from the existing contract limit (60.140 MGM) to calculate the water supply surplus/deficit (11.988 MGM deficit).

Additional water demands due to future development will further increase the water supply deficit and the firm capacity deficit. Therefore, based on the information in **Table 3** below, a water supply shortage is indicated.

It is noted in the NJDEP Public Water System Deficit/Surplus Analysis that the contract with the Kearny Water Department expired and will not be renewed. It is further noted that overdraft provisions of 120% are included. Regional water supplies should be sufficient to cover any of the Township's water demands subject to the necessary agreements being executed. Refer to **Appendix N** for the Cedar Grove NJDEP Public Water System Deficit/Surplus Analysis.

Table 3 – Cedar Grove Township Water Supply Demand by PWSID

PWSID	Purveyor	Contract Limit (MGM)	Firm Capacity (MGD)	Peak Daily Demand (MGD)	Total Peak Monthly Demand (MGM)	Firm Capacity Deficit/Surplus (MGD)	Water Supply Deficit/Surplus (MGM)	Year
0704001	Cedar Grove Water Dept.	60.14	1.940	2.170[1]	66.780[1]	-0.23	-6.64	2013
Peak Demand Due to Future Development (MGD)				0.345	5.348			
				2.515	72.128	-0.575	-11.988	2033

[1]Peak Daily Demand and Total Peak Monthly Demand have been obtained from the NJDEP Division of Water Supply and Geoscience website (refer to appendix). For conservative purposes, the committed peak flows have been included in the existing condition. It may be possible that a portion of this committed peak should be included in the future development values in this table. The noted deficit is more of a water supply contract matter than a real supply deficit, but should still be addressed.

Model Ordinances

Table 4 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.

Table 4 – Summary of Ordinance Adoption

Ordinance	**Date Adopted**	**Complies with NJAC 7:15**	**Comments and More Protective Standards**
Stormwater Management (Ground Water Recharge Maintenance)	2004-2009	YES	NO
Riparian Zone Protection	NO	NO	NO
Steep Slope Protection	NO	NO	NO
Septic System Maintenance	NO	NO	NO
Dry Conveyances in Sewer Service Area	NO	NO	NO
Septic Connection in Sewer Service Area	NO	NO	NO

City of Orange Township

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

The northern portion of the City of Orange Township is located within the Passaic Valley Sewer Commission service area (NJ0021016) and, thus, is addressed in the Passaic Valley Sewer Commission Wastewater Management Plan approved on December 8, 2008. A smaller portion of the southwestern part of the Township is served by the Joint Meeting Essex & Union Counties (NJ0024741) and is addressed in the Joint Meeting Essex & Union Counties Wastewater Management Plan, which is currently going through the adoption process.

City of East Orange

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

The northern portion of the City of East Orange is located within the Passaic Valley Sewer Commission service area (NJ0021016) and, thus, is addressed in the Passaic Valley Sewer Commission Wastewater Management Plan approved on December 8, 2008. A smaller portion of the southern part of the City is served by the Joint Meeting Essex & Union Counties (NJ0024741) and is addressed in the Joint Meeting Essex & Union Counties Wastewater Management Plan, which is currently going through the adoption process.

Borough of Essex Fells

Introduction

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

Essex Fells was incorporated as a borough from portions of what is now Fairfield Township. Essex Fells Borough is located in the northwestern portion of Essex County and encompasses approximately 1.4 square miles. The Borough is home to a portion of Grover Cleveland Park, the seventh largest park in Essex County, in the north section of the Borough. The majority of the land is used for residential purposes, with additional conservation and governmental/institutional uses. The Borough zoning designations are shown on **Map 10**.

The Census Bureau population count for Essex Fells Borough was 2,110 in 2010 (extrapolated to 2,158 in 2013). In year 2000, the population was 2,162; therefore the Township population has decreased by less than one percent over the last 13 years.

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

- Borough of Essex Fells is considered an urbanized municipality.
- The municipality is not located within the Highlands Region.

Existing Infrastructure

The existing wastewater collection and conveyance infrastructure within this municipality consists of the following:

- Collection System – the Borough of Essex Fells is generally developed throughout its borders with the exception of open space. The Borough's wastewater collection system includes over 15 miles of gravity sewer. The wastewater collection system conveys sewage to the Caldwell Sewage Treatment Plant (STP; NJ0020427) located in West Caldwell Township and a small portion is conveyed to the Verona STP (NJ0025330).
- Pumping Stations – The wastewater collection system also includes two (2) pump stations within the Essex Fells Borough borders.

There are no existing major wastewater treatment facilities located within the municipality. Further, there are no minor facilities that discharge to surface water (DSW) or groundwater (DGW). The existing treatment facilities are illustrated on **Map 1**.

Environmental and Other Land Features

The countywide Environmental Features are shown on **Maps 4** through **9**.

The northern portion of the Township includes a portion of Grover Cleveland Park. The southeast portion contains the Essex Fells Country Club (golf course). The Township contains some minor steep slope areas.

Delineation of Service Areas and Planning Integration

Sewer Service Areas

The existing areas served and future SSAs within Borough of Essex Fells are shown on **Maps 1** and **11**, respectively. Wastewater in the Borough is conveyed to the Caldwell STP and a small portion in the northeast of the Borough is conveyed to the Verona STP. The facilities providing treatment to these service areas have associated facilities tables in **Appendix C**.

General Service Area

General Service Areas (GSAs) consist of those areas with discharges to groundwater of less than 2,000 gallons per day (i.e. individual subsurface sewage disposal systems a/k/a residential septic systems) that are neither designated for sewer service nor as non-discharge areas. A general service area for individual subsurface sewage disposal systems has not been established in Essex Fells.

Non-discharge areas are areas where additional wastewater generation and/ or discharge are prohibited. In Borough of Essex Fells, non-discharge areas include Grover Cleveland Park, as delineated on **Maps 1** and **11**.

Coordination and Compliance with the New Jersey Highlands Regional Master Plan

Borough of Essex Fells is not located within the New Jersey Highlands Region.

Significant Actions

There are no significant actions proposed as a part of this WMP.

Future Wastewater Demand and Facilities

It is noted that all municipalities within Essex County are considered urbanized for the purposes of this WMP. As such, it is appropriate to evaluate future growth in the SSAs using governmental and/or institutional projected demographic data rather than evaluate remaining undeveloped lands. For Borough of Essex Fells, in order to evaluate capacity and future sanitary flow rates, a build-out projection was made using 20-year projections for both residential population growth and labor force growth. Data for these projections was obtained from the North Jersey Transportation Planning Authority (NJTPA) municipal forecasts approved on September 10, 2013 and is provided in

Appendix M. Based on the calculated 20-year population figures, estimated residential and non-residential wastewater flows were calculated based on the following:

Residential build-out flows are based on the Water Quality Management Plan rules published in NJAC 7:15. These rules direct urban based build-outs to use **75 gpd/capita** for residential sewage.

Non-residential build-out flows were based on the following:

- 0.1 gpd/SF per NJAC 7:14A-23.1; and
- Office space is 250 SF per employee per the "Building Owners and Managers Association Guidelines" (BOMA) Standard Method for Measuring Office Floor Area

Therefore, non-residential sewage is estimated at:

(0.1 gpd/SF)*(250 SF/employee) = **25 gpd/employee**

Sewer Service Area Wastewater Capacity Analysis

Table 1 presents the results of the Build-out Analysis for Borough of Essex Fells. The table identifies the current NJDPES permit flow of the Caldwell STP at 4.6 MGD. The most current 12 months of existing STP monthly average 30-day flow is 4.088 MGD, based upon flow data from December 2012 through November 2013 (from NJDEP). It is unknown if there are any Treatment Works Approvals (TWAs) approved by NJDEP for unconnected projects within the Borough of Essex Fells, so the only other anticipated future flow is based upon the 20-year projection described above.

The Borough's residential population is anticipated to increase by 353 people in the next 20 years. At 75 gpd/capita, this equates to 0.026 MGD. The Borough's employment population is anticipated to increase by 147 in the next 20 years. At 25 gpd/employee, this equates to 0.004 MGD. The total projected build-out flow (from new projected development) is noted in **Table 1** as 0.030 MGD.

It is noted that an area located in the northeast section of the Borough is tributary to the Verona STP. Based on a review of the lots, it appears that these areas are already built-out and no additional development will occur in these areas.

Refer to the Borough of West Caldwell chapter regarding total tributary build-out flows vs. Caldwell STP capacity.

Table 1: Borough of Essex Fells Build-out Table (SSAs)

Wastewater Treatment Facility			Build-out Flow				WWTP	
Major Public Wastewater Treatment Facility	**Capacity Allocation/ Permitted Capacity (mgd)**	**Total Existing Flow (mgd)**	**Total Flow Attributed to TWAs Approved But Unconnected (mgd)**	**Essex Fells Residential Build-out Flow (mgd)**	**Essex Fells Non-Residential Build-out Flow (mgd)**	**Total Essex Fells Projected Build-out Flow (mgd)**	**Total Projected 2033 Flow (mgd)**	**Remaining Capacity (mgd)**
Caldwell STP	4.6	4.088[1]	0	0.026	0.004	0.030	n/a	n/a

[1] This is the current 12 month annual average for 12/1/12 to 11/30/13.

Note: Municipalities tributary to the Caldwell STP include Borough of Caldwell, Borough of Roseland, Borough of Essex Fells, Borough of North Caldwell, Township of West Caldwell, Township of Fairfield, Township of Verona and Township of West Orange. Refer to the Borough of West Caldwell chapter (Table 1) regarding total tributary build-out flows vs. Caldwell STP capacity.

General Service Area Wastewater Capacity Analysis

Various minimum lot areas are required for a single dwelling unit, or other development within the Borough of Essex Fells dependent on zoning. N.J.S.A. 58: 11-25 of the Realty Improvement Sewerage and Facilities Act grants the approval for construction and installation of an Individual Subsurface Sewage Disposal System (ISSDS) by the local Administrative Authority. As provided under N.J.A.C. 7:9A the standards for the proper location, design, and minimum separation distance between the various components of the system and the other features would render the local approval for the construction of an ISSDS on smaller lots exceedingly difficult. As the use of ISSDS as an onsite treatment alternative may not be permissible on the minimum lot size parcels within the Borough of Essex Fells, the Department has recognized the stated intent of the Borough of Essex Fells is to provide sewer service within the entire designated planning area to the maximum extent allowable under the conformance of federal waiver or mapping revision process. Consequently, all proposed subdivisions resulting in six (6) or more dwelling units within those areas of the Borough of Essex Fells that are outside of the proposed sewer service area shall require an amendment. As part of the amendment review process, the analysis to evaluate the groundwater impacts and septic systems density must be conducted. As a result, the Nitrate Dilution Model analysis was not required as part of the review of the Essex County WMP.

Water Supply Demand

Pursuant to N.J.A.C. 7:15-5.25(f), a water supply analysis is required to demonstrate that the water supply needs associated with existing and future development do not conflict with the current New Jersey State Water Supply Plan. The current New Jersey State Water Supply Plan was adopted in August 1996.

The Borough of Essex Fells water supply comes from groundwater wells owned by the Borough for a total monthly allocation of 155.000 MGM. Essex Fells has a firm capacity of 5.184 MGD. Firm capacity is defined as “adequate pumping equipment and/or treatment capacity (excluding coagulation, flocculation, and sedimentation) to meet peak daily demand when the largest pumping station or treatment unit is out of service.” The existing total peak daily demand (including committed peak) is 4.338 MGD, where committed peak is calculated as follows:

[(Projected Residential average daily demand) + (Projected Non-residential average daily demand)] * 3.0

where:

Projected Residential Average Daily Demand (ADD) was calculated according to the State of NJ Division of Consumer Affairs (DCA’s) Residential Site Improvement Standards (RSIS), N.J.A.C. 5:21-5.2(d) at **100 gpd/capita**.

Non-residential ADD was based on N.J.A.C. 7:10-12.6(b) for office space, Table 1:

- 0.125 gpd/SF; and

- Office space is 250 SF per employee per the "Building Owners and Managers Association Guidelines" (BOMA) Standard Method for Measuring Office Floor Area

Therefore, non-residential ADD is estimated at:

(0.125 gpd/SF)*(250 SF/employee) = **31.25 gpd/employee**

The Borough's residential population is anticipated to increase by 353 people in the next 20 years. At 100 gpd/capita, this equates to 0.035 MGD. Cedar Grove's employment population is anticipated to increase by 147 in the next 20 years. At 31.25 gpd/employee, this equates to 0.005 MGD. Therefore, the total projected build-out ADD is estimated at 0.040 MGD.

For the purposes of water supply projections, the NJDEP uses a greater per capita flow than RSIS. These different per capita flow rates account for the difference in sewer and water projections within this chapter.

According to the NJDEP Public Water System Deficit/Surplus Analysis (updated November 2012) Essex Fells currently has a water supply surplus of 20.809 MGM and a firm capacity surplus of 0.846 MGD. In order to update the water supply and firm capacity surplus/deficit for future demands, multipliers were applied to the projected build-out ADD in accordance with the NJDEP Firm Capacity and Water Allocation Analysis as follows:

Firm Capacity Surplus/Deficit Calculation:

Assuming the future development as "committed peak," a peaking factor of 3.0 was applied to the projected build-out ADD. **Table 2** shows Peak Demand due to Future Development at 0.120 MGD. [0.040 MGD * 3.0 = 0.120 MGD]

The projected peak daily demand (0.120 MGD) was added to the existing peak daily demand (4.338 MGD)and then subtracted from the existing firm capacity (5.184 MGD) to calculate the firm capacity surplus/deficit (0.726 MGD surplus).

Water Supply Surplus/Deficit Calculation:

Assuming the future development as "committed peak," a peaking factor of 1.5 was applied to the projected build-out ADD and then multiplied by 31 days. **Table 2** shows Peak Demand due to Future Development at 1.855 MGD. [0.040 MGD * 1.5 * 31 = 1.855 MGM]

The projected peak monthly demand (1.855 MGM) was added to the existing peak monthly demand (134.191 MGM) and then subtracted from the existing allocation (155.000 MGM) to calculate the water supply surplus/deficit (18.954 MGM surplus).

Therefore, based on the information in **Table 2** below, there is no information indicating that there would be a shortage of water supply. Further, there are no significant water supply issues identified in the current State Water Supply Plan for the planning areas impacting Passaic County." Refer to **Appendix N** for the Essex Fells Borough NJDEP Public Water System Deficit/Surplus Analysis.

Table 2 – Borough of Essex Fells Water Supply Demand by PWSID

PWSID	Purveyor	Allocation Monthly Limit (MGM)	Firm Capacity (MGD)	Peak Daily Demand (MGD)	Total Peak Monthly Demand (MGM)	Firm Capacity Deficit/Surplus (MGD)	Water Supply Deficit/Surplus (MGM)	Year
0706001	Essex Fells Borough	155.000	5.184	4.338[1]	134.191[1]	0.846	20.809	2012
Peak Demand Due to Future Development (MGD)				0.120	1.855			
				4.458	136.046	0.726	18.954	2033

[1]Peak Daily Demand and Total Peak Monthly Demand have been obtained from the NJDEP Division of Water Supply and Geoscience website (refer to appendix). For conservative purposes, the committed peak flows have been included in the existing condition. It may be possible that a portion of this committed peak should be included in the future development values in this table.

Model Ordinances

Table 3 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.

Table 3 – Summary of Ordinance Adoption

Ordinance	**Date Adopted**	**Complies with NJAC 7:15**	**Comments and More Protective Standards**
Stormwater Management (Ground Water Recharge Maintenance)	2004-2009	YES	NO
Riparian Zone Protection	NO	NO	NO
Steep Slope Protection	NO	NO	NO
Septic System Maintenance	NO	NO	NO
Dry Conveyances in Sewer Service Area	NO	NO	NO
Septic Connection in Sewer Service Area	NO	NO	NO

Fairfield Township

Introduction

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

Fairfield Township was originally formed in 1798 from Caldwell Township. The Township is located in the northwestern portion of Essex County and encompasses approximately 5.1 square miles. The Borough is zoned approximately half residential; the remaining half of the Borough contains open space, conservation, commercial and light industrial lands. The Township zoning designations are shown on **Map 10**.

The Census Bureau population count for Fairfield was 7,470 in 2010 (extrapolated to 7,556 in 2013). In year 2000, the population was 7,063; therefore the Township population has increased by approximately 7% over the last 13 years.

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

- Fairfield Township is considered an urbanized municipality.
- The municipality is not located within the Highlands Region.

Existing Infrastructure

The existing wastewater collection and conveyance infrastructure within this municipality consists of the following:

- Collection System – Fairfield Township is generally developed throughout its borders with the exception of conservation lands and environmentally constrained lands. The Township's wastewater collection system includes over 56 miles of gravity sewer and force main. The wastewater collection system conveys sewage to the Two Bridges Sewage Authority (TBSA; NJ0029386) located in the Borough of Lincoln Park. A portion of the Township's wastewater flow is also conveyed to the Caldwell STP (NJ0020427) in West Caldwell.
- Pumping Stations – The wastewater collection system also includes two (2) pump stations within the Fairfield Township borders.

Table 1 presents additional minor facilities that discharge to surface water (DSW) in Fairfield Township. These facilities are regulated through NJDEP and have individual New Jersey Pollutant Discharge Elimination System (NJPDES) discharge permits. There are no facilities that discharge to groundwater. The existing treatment facilities are illustrated on **Map 1**.

Table 1: Additional NJPDES (DSW) Minor Permitted Facilities within Fairfield Township

NJPDES Permit Number	Facility Name	Permit Program Code	Receiving Stream or Aquifer	Classification	Contact Organization Name	Block	Lot	Permitted Flow (mgd)	Existing Flow[1] (mgd)	Future Flow[1] (mgd)	Discharge Category
NJ0086436	Prestige Rubber Mfg. Corp.	SW	Deepavaal Brook	FW2-NT	Prestige Rubber Mfg. Corp.	1102	6	0.005	0.011	0.011	Minor Wastewater[2]

[1]Flow indicated is monthly average flow for flow periods 11/1/2012 to 1/31/2013 and 2/1/2013 to 4/30/2013.

[2]Untreated contact cooling water (CCW), non-contact cooling water (NCCW) and boiler blowdown.

Environmental and Other Land Features

The countywide Environmental Features are shown on **Maps 4** through **9**.

Great Piece Meadows is owned by the State as a permanently protected wildlife area. It is located in Fairfield (Essex County), the Borough of Lincoln Park and the Township of Montville (Morris County). The largest part of Great Piece Meadows is located north of I-80 in Fairfield; Little Piece Meadows is also open space located south of I-80 and is owned Wildlife Preserves. Great Piece Meadows and Little Piece Meadows (or Piece Meadows) contain various environmental and land features including natural heritage priority sites, state endangered species, open space, riparian buffers and wetlands.

Environmentally sensitive areas exist in both the western part of the Township and along Deepavaal Brook. The majority of the Township is in the FEMA Flood Zone.

Delineation of Service Areas and Planning Integration

Sewer Service Areas

The existing areas served and future SSAs within Fairfield Township are shown on **Maps 1** and **11**, respectively. Wastewater in the Township is conveyed to the Two Bridges Sewer Authority (TBSA) with a small portion in the east (surrounding the Green Brook Country Club) conveyed to the Caldwell STP. The facilities providing treatment to this service area have associated facilities tables in **Appendix C**.

General Service Area

General Service Areas (GSAs) consist of those areas with discharges to groundwater of less than 2,000 gallons per day (i.e. individual subsurface sewage disposal systems a/k/a residential septic systems) that are neither designated for sewer service nor as non-discharge areas. A general service area for individual subsurface sewage disposal systems has not been established in Fairfield.

Non-discharge areas are areas where additional wastewater generation and/ or discharge are prohibited. In Fairfield Township, non-discharge areas generally include the open space and wetlands along the Passaic River in the western portion of the Borough and along Deepavaal Brook, as delineated on **Maps 1** and **11**.

Coordination and Compliance with the New Jersey Highlands Regional Master Plan

Fairfield Township is not located within the New Jersey Highlands Region.

Significant Actions

One sewer service area in North Caldwell was edited to show the correct existing boundaries. That is, there were no changes to the actual sewer service provided to the area, but the map boundaries

were corrected to reflect actual conditions. The area was previously shown tributary to the Caldwell STP but is actually tributary to TBSA. The area is described as follows:

- The area bounded by Grandview Ave. on the south and Fairfield Road/municipal boundary of North Caldwell on the north is actually served by TBSA. The revised SSA is reflected on **Map 11** and is shown outlined in red on **Figure 1** below.

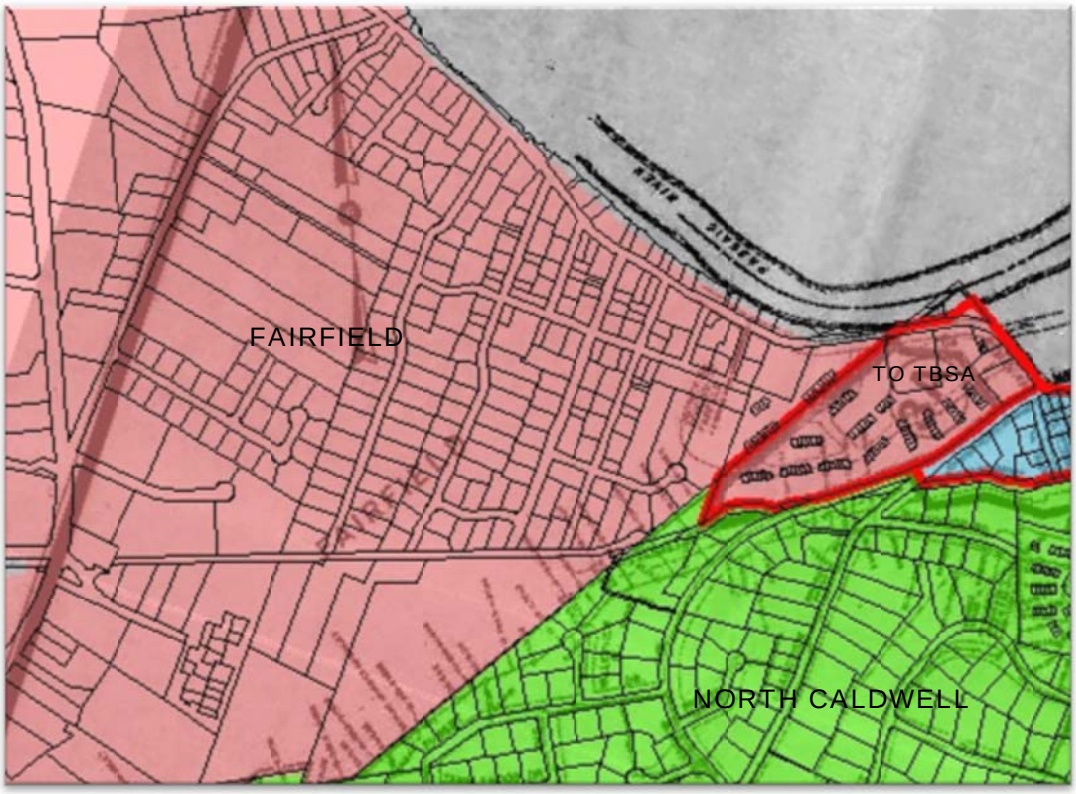


Figure 1: Corrections to Existing Sewer Service Area in North Caldwell

One additional sewer service area boundary in Fairfield was edited to show the correct existing boundaries. Again, there were no changes to the actual sewer service provided to the area, but the map boundaries were corrected to reflect actual conditions. The area was previously shown tributary to TBSA but is actually tributary to the Caldwell STP. The area is described as follows:

- The area bounded by the Green Brook Country Club on the east. The revised SSA includes the remainder of residences on Schindler Way. The revised SSA is reflected on **Map 11** and is shown outlined in red on **Figure 2** below.

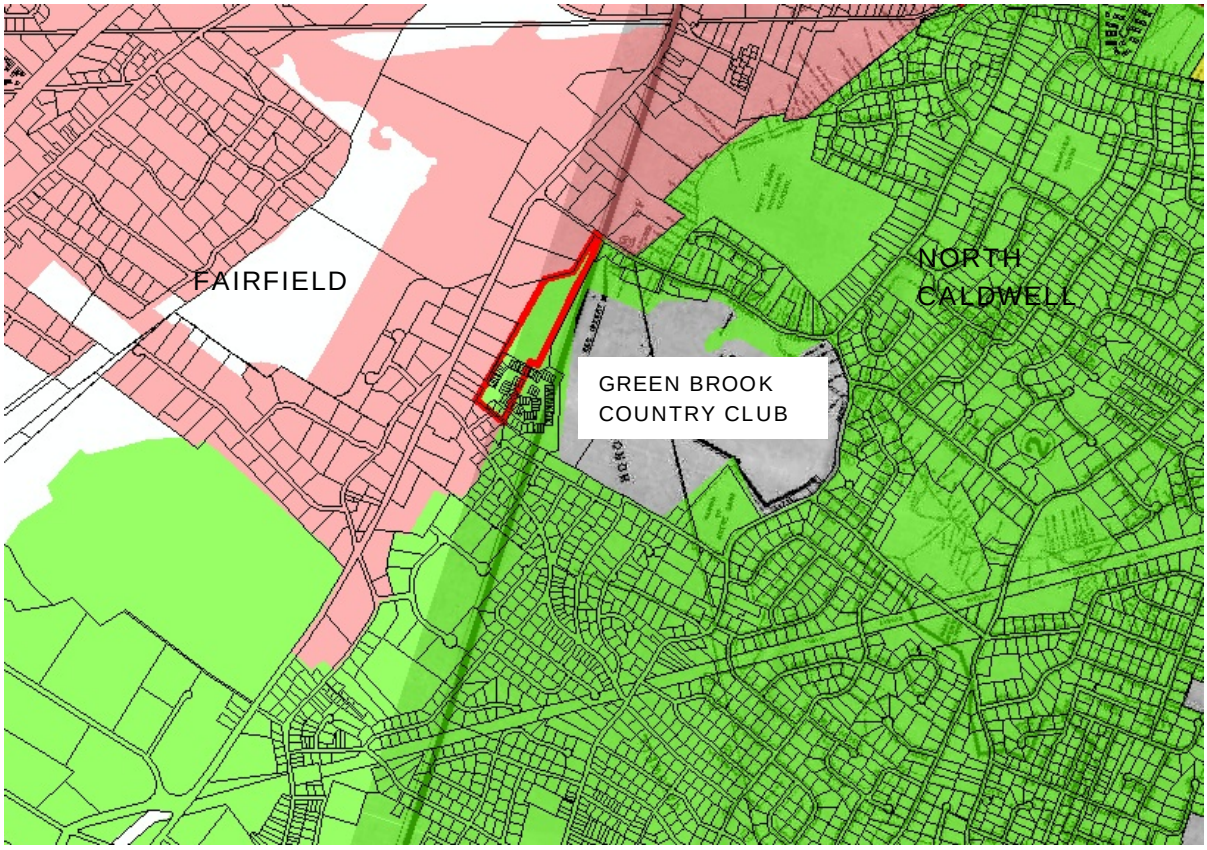


Figure 2: Corrections to Existing Sewer Service Area in Fairfield

Future Wastewater Demand and Facilities

It is noted that all municipalities within Essex County are considered urbanized for the purposes of this WMP. As such, it is appropriate to evaluate future growth in the SSAs using governmental and/or institutional projected demographic data rather than evaluate remaining undeveloped lands. For Fairfield Township, in order to evaluate capacity and future sanitary flow rates, a build-out projection was made using 20-year projections for both residential population growth and labor force growth. Data for these projections was obtained from the North Jersey Transportation Planning Authority (NJTPA) municipal forecasts approved on September 10, 2013 and is provided in **Appendix M**. Based on the calculated 20-year population figures, estimated residential and non-residential wastewater flows were calculated based on the following:

Residential build-out flows are based on the Water Quality Management Plan rules published in NJAC 7:15. These rules direct urban based build-outs to use **75 gpd/capita** for residential sewage. Build-out flows for 2-bedroom townhomes were based on NJAC 7:14A-23.3 at **225 gpd/residence**.

Non-residential build-out flows were based on the following:

- 0.1 gpd/SF per NJAC 7:14A-23.1; and
- Office space is 250 SF per employee per the "Building Owners and Managers Association Guidelines" (BOMA) Standard Method for Measuring Office Floor Area

Therefore, non-residential sewage is estimated at:

(0.1 gpd/SF)*(250 SF/employee) = **25 gpd/employee**

Sewer Service Area Wastewater Capacity Analysis

Table 2 presents the results of the Build-out Analysis for Fairfield Township. The table identifies the current NJDPES permit flow of the TBSA wastewater treatment plant (WWTP) at 7.5 MGD. The most current 12 months of existing WWTP monthly average 30-day flow is 5.443 MGD, based upon flow data from December 2012 through November 2013 (from NJDEP). It is unknown if there are any Treatment Works Approvals (TWAs) approved by NJDEP for unconnected projects within Fairfield, so the anticipated future flow within the Township is based upon the 20-year projection described above. There are additional sewer service areas outside of the Fairfield Township boundaries in the Township of West Caldwell that are also tributary to TBSA. In these areas, the 20-year population projections were used in addition to an analysis to identify vacant lots and their development potential. Planned development was taken into account and zoning was used to determine the number of residences on land where there were no published plans for development. Residential build-out flows for these areas were based on the above criteria and added to the total build-out flows for Fairfield.

West Caldwell

A review of the TBSA service area in West Caldwell showed that there is development occurring on Clinton Road. The Heritage at West Caldwell townhomes are currently under construction and will consist of 38 two-bedroom residences. Using 225 gpd/residence per NJAC 7:14A-23.3, future residential wastewater flows from this development are estimated at 8,550 gpd. Based on the number of townhomes, and using 2.69 people/household (per the 2010 Census), the total population growth tributary to TBSA is estimated at 102 people.

Fairfield

Fairfield's residential population is anticipated to increase by 596 people in the next 20 years. At 75 gpd/capita, this equates to 0.045 MGD. Fairfield's employment population is anticipated to increase by 526 in the next 20 years. At 25 gpd/employee, this equates to 0.013 MGD. The total projected build-out flow for Fairfield is 0.058 MGD.

Total projected build-out flow for Fairfield and the area of West Caldwell that is tributary to TBSA is 0.066 MGD, as indicated in **Table 2**.

Table 2: Fairfield Township Build-out Table (SSAs)

Wastewater Treatment Facility			Build-out Flow from Fairfield			
Major Public Wastewater Treatment Facility	**Capacity Allocation/ Permitted Capacity (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)**	**Total Projected Build-out Flow (mgd)**
Two Bridges Sewerage Authority (TBSA)	7.5	5.443[1]	0	0.053	0.013	0.066

[1] This is the current 12 month annual average for 12/1/12 to 11/30/13.

Under the existing conditions, the TBSA WWTP has sufficient wastewater treatment capacity (existing capacity surplus of 2.057 MGD). The 20-year build-out from Fairfield Township will add an estimated 0.66 MGD to the existing flow into the plant for a total of 5.509 MGD. The development potential of the other municipalities contributing to the TBSA flow is unknown at this time. Refer to **Appendix C** for the existing TBSA facilities table (provided by NJDEP).

General Service Area Wastewater Capacity Analysis

Various minimum lot areas are required for a single dwelling unit, or other development within Fairfield Township dependent on zoning. N.J.S.A. 58: 11-25 of the Realty Improvement Sewerage and Facilities Act grants the approval for construction and installation of an Individual Subsurface Sewage Disposal System (ISSDS) by the local Administrative Authority. As provided under N.J.A.C. 7:9A the standards for the proper location, design, and minimum separation distance between the various components of the system and the other features would render the local approval for the construction of an ISSDS on smaller lots exceedingly difficult. As the use of ISSDS as an onsite treatment alternative may not be permissible on the minimum lot size parcels within Fairfield Township, the Department has recognized the stated intent of Fairfield Township is to provide sewer service within the entire designated planning area to the maximum extent allowable under the conformance of federal waiver or mapping revision process. Consequently, all proposed subdivisions resulting in six (6) or more dwelling units within those areas of Fairfield Township that are outside of the proposed sewer service area shall require an amendment. As part of the amendment review process, the analysis to evaluate the groundwater impacts and septic systems density must be conducted. As a result, the Nitrate Dilution Model analysis was not required as part of the review of the Essex County WMP.

Water Supply Demand

Pursuant to N.J.A.C. 7:15-5.25(f), a water supply analysis is required to demonstrate that the water supply needs associated with existing and future development do not conflict with the current New Jersey State Water Supply Plan. The current New Jersey State Water Supply Plan was adopted in August 1996.

Fairfield purchases water from the Passaic Valley Water Commission (PVWC; NJ1605002) for a total monthly contract limit of 85.250 MGM. Fairfield has a firm capacity of 2.750 MGD. Firm capacity is defined as “adequate pumping equipment and/or treatment capacity (excluding coagulation, flocculation, and sedimentation) to meet peak daily demand when the largest pumping station or treatment unit is out of service.” The existing total peak daily demand (including committed peak) is 2.290 MGD, where committed peak is calculated as follows:

[(Projected Residential average daily demand) + (Projected Non-residential average daily demand)] * 3.0

where:

Projected Residential Average Daily Demand (ADD) was calculated according to the State of NJ Division of Consumer Affairs (DCA’s) Residential Site Improvement Standards (RSIS), N.J.A.C. 5:21-5.2(d) at **100 gpd/capita**.

Non-residential ADD was based on N.J.A.C. 7:10-12.6(b) for office space, Table 1:

- 0.125 gpd/SF; and

- Office space is 250 SF per employee per the "Building Owners and Managers Association Guidelines" (BOMA) Standard Method for Measuring Office Floor Area

Therefore, non-residential ADD is estimated at:

(0.125 gpd/SF)*(250 SF/employee) = **31.25 gpd/employee**

The Township's residential population is anticipated to increase by 596 people in the next 20 years. At 100 gpd/capita, this equates to 0.060 MGD. Fairfield's employment population is anticipated to increase by 526 in the next 20 years. At 31.25 gpd/employee, this equates to 0.016 MGD. Therefore, the total projected build-out ADD is estimated at 0.076 MGD.

For the purposes of water supply projections, the NJDEP uses a greater per capita flow than RSIS. These different per capita flow rates account for the difference in sewer and water projections within this chapter.

According to the NJDEP Public Water System Deficit/Surplus Analysis (updated December 2013) Fairfield currently has a water supply surplus of 14.250 MGM and a firm capacity surplus of 0.460 MGD. In order to update the water supply and firm capacity surplus/deficit for future demands, multipliers were applied to the projected build-out ADD in accordance with the NJDEP Firm Capacity and Water Allocation Analysis as follows:

Firm Capacity Surplus/Deficit Calculation:

Assuming the future development as "committed peak," a peaking factor of 3.0 was applied to the projected build-out ADD. **Table 3** shows Peak Demand due to Future Development at 0.228 MGD. [0.076 MGD * 3.0 = 0.228 MGD]

The projected peak daily demand (0.228 MGD) was added to the existing peak daily demand (2.290 MGD)and then subtracted from the existing firm capacity (2.750 MGD) to calculate the firm capacity surplus/deficit (0.232 MGD surplus).

Water Supply Surplus/Deficit Calculation:

Assuming the future development as "committed peak," a peaking factor of 1.5 was applied to the projected build-out ADD and then multiplied by 31 days. **Table 3** shows Peak Demand due to Future Development at 3.536 MGD. [0.076 MGD * 1.5 * 31 = 3.536 MGM]

The projected peak monthly demand (3.536 MGM) was added to the existing peak monthly demand (71.000 MGM) and then subtracted from the existing monthly contract limit (85.250 MGM) to calculate the water supply surplus/deficit (10.714 MGM surplus).

Therefore, based on the information in **Table 3** below, there is no information indicating that there would be a shortage of water supply. Further, there are no significant water supply issues identified in the current State Water Supply Plan for the planning areas impacting Passaic County." Refer to **Appendix N** for the Fairfield Township Water Department NJDEP Public Water System Deficit/Surplus Analysis.

Table 3 – Fairfield Township Water Department Water Supply Demand by PWSID

PWSID	Purveyor	Monthly Contract Limit (MGM)	Firm Capacity (MGD)	Peak Daily Demand (MGD)	Total Peak Monthly Demand (MGM)	Firm Capacity Deficit/Surplus (MGD)	Water Supply Deficit/Surplus (MGM)	Year
0707001	Fairfield Township Water Department	85.250	2.750	2.290[1]	71.000[1]	0.460	14.250	2013
Peak Demand Due to Future Development (MGD)				0.228	3.536			
				2.518	74.536	0.232	10.714	2033

[1]Peak Daily Demand and Total Peak Monthly Demand have been obtained from the NJDEP Division of Water Supply and Geoscience website (refer to appendix). For conservative purposes, the committed peak flows have been included in the existing condition. It may be possible that a portion of this committed peak should be included in the future development values in this table.

Model Ordinances

Table 4 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.

Table 4 – Summary of Ordinance Adoption

Ordinance	**Date Adopted**	**Complies with NJAC 7:15**	**Comments and More Protective Standards**
Stormwater Management (Ground Water Recharge Maintenance)	2004-2009	YES	NO
Riparian Zone Protection	NO	NO	NO
Steep Slope Protection	NO	NO	NO
Septic System Maintenance	NO	NO	NO
Dry Conveyances in Sewer Service Area	NO	NO	NO
Septic Connection in Sewer Service Area	NO	NO	NO

Borough of Glen Ridge

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

The Borough of Glen Ridge is located within the Passaic Valley Sewer Commission service area (NJ0021016) and, thus, is addressed in the Passaic Valley Sewer Commission Wastewater Management Plan approved on December 8, 2008.

Irvington Township

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

Irvington Township is located within the Joint Meeting Essex & Union Counties wastewater service area (NJ0024741) and, thus, is addressed in the Joint Meeting Essex & Union Counties Wastewater Management Plan, which is currently going through the adoption process. A small portion of the Township (approximately 10 lots) are also served by the Passaic Valley Sewer Commission (NJ0021016). The Passaic Valley Sewer Commission Wastewater Management Plan was approved on December 8, 2008.

Livingston Township

Introduction

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

Livingston Township was originally a part of Caldwell Township (now Fairfield Township) and Springfield Township (in Union County) until it was incorporated as the Township of Livingston in 1813. Livingston Township is located in the southwestern portion of Essex County and encompasses approximately 14 square miles. The Township is home to portions of the Riker Hill Complex, which includes the Riker Hill Art Park, Walter Kidde Dinosaur Park and Becker Park, and part of the West Essex Reservation both part of the Essex County Parks System. The remaining land within the Township consists mainly of residential uses with a small portion zoned for business, commercial and light industrial use. The Township zoning designations are shown on **Map 10**.

The Census Bureau population count for Livingston Township was 29,370 in 2010 (extrapolated to 29,718 in 2013). In year 2000, the population was 27,391; therefore the Township population has grown by approximately 8.5% over the last 13 years.

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

- Livingston Township is considered an urbanized municipality.
- The municipality is not located within the Highlands Region.

Existing Infrastructure

The existing wastewater collection and conveyance infrastructure within this municipality consists of the following:

- Collection System & Pumping Stations – Livingston Township is generally developed throughout its borders with the exception of conservation lands. The Township's wastewater collection system includes over 149 miles of gravity sewer and force main with pipe diameters ranging from 4-inch to 42-inch. The Township's wastewater collection system conveys sewage to the Township's Water Pollution Control Facility and currently serves over 12,300 customers. The collection system exclusively serves the Township of Livingston. The wastewater collection system also includes eight (8) lift stations.
- Collection System (outside service providers) – a small portion of the Township's wastewater (western section of the Township off of Champion Boulevard) is conveyed to the Parsippany-Troy Hills STP (NJ0024970). There is a small service area with a population of 548 in the southeast portion of the Township whose wastewater is conveyed to the Joint Meeting of Essex and Union County STP (JMEUC; NJ0024741). An additional section of the Township

located to the north of I-280 is tributary to the Caldwell STP (NJ0020427). This area includes 5 residential lots, the West Essex Baptist Church and SS Nicholas, Constantine & Helen Greek Orthodox Church.

The existing major wastewater treatment facilities located within the municipality include:

- Livingston Township Water Pollution Control Facility (WPCF) – The Township's WPCF was originally constructed in 1938. Over the years, the WPCF has been expanded and upgraded to meet the needs of the growing Township and to comply with more stringent discharge permit requirements. The capacity of the WPCF was increased from 3.0 million gallons per day (MGD) to 4.2 MGD in 1979 and the WPCF was upgraded to provide Level 4 (Tertiary) Treatment in 1987 which was completed in 1993. In 2000, the Township completed modifications and upgrades to the WPCF to allow the plant uprating from 4.2 MGD to 4.62 MGD. This project included construction of a Chemical Feed Building (polymer and alum systems), headworks improvements and effluent site piping modifications. During 2011, the Township completed two (2) projects at the WPCF. One (1) project included installation of submersible mixers in the first pass of each of the two (2) Nitrification Aeration Tanks to meet the new monthly average nitrate limits effective August 1, 2011. The plant outfall is located on the Passaic River.

Table 1 presents additional minor facilities that discharge to surface water (DSW) in Livingston Township. These facilities are regulated through NJDEP and have individual New Jersey Pollutant Discharge Elimination System (NJPDES) discharge permits. There are no facilities that discharge to groundwater. The existing treatment facilities are illustrated on **Map 1**.

Table 1: Additional NJPDES (DSW) Minor Permitted Facilities within Livingston Township

NJPDES Permit Number	Facility Name	Permit Program Code	Receiving Stream or Aquifer	Classification	Contact Organization Name	Block	Lot	Permitted Flow (mgd)	Existing Flow[1] (mgd)	Future Flow[1] (mgd)	Discharge Category
NJG0155501	Exxon S/S 31310	SW	Canoe Brook	FW2-NT	Exxon	3700	8	n/a[2]	0.001	0.001	Industrial

[1]Flow indicated is monthly average flow from 12/1/2012 through 11/30/13

[2]Treatment works shall operate at the optimal average design flow rate for maximum groundwater cleanup.

Environmental and Other Land Features

The countywide Environmental Features are shown on **Maps 4** through **9**.

The Passaic River forms the western border of the Township. A portion of the Riker Hill Complex is located in the northwestern section of the Township. The western portion of the Township includes a portion of the West Essex Reservation.

Surface water, riparian buffer, wetlands, flood zones and environmentally sensitive areas are prevalent along the western border and in the southern portion of the Township.

Delineation of Service Areas and Planning Integration

Sewer Service Areas

The existing areas served and future SSAs within Livingston Township are shown on **Maps 1** and **11**, respectively. Wastewater treatment within the Township is predominantly provided by the Livingston Township WPCF. There are additional small service areas that are served by the Parsippany-Troy Hills STP, Caldwell STP and JMEUC. The facilities providing treatment to these service areas have associated facilities tables in **Appendix C** (Parsippany-Troy Hills STP and JMEUC facilities tables provided by NJDEP).

General Service Area

General Service Areas (GSAs) consist of those areas with discharges to groundwater of less than 2,000 gallons per day (i.e. individual subsurface sewage disposal systems a/k/a residential septic systems) that are neither designated for sewer service nor as non-discharge areas. A general service area for individual subsurface sewage disposal systems has not been established in Livingston.

Non-discharge areas are areas where additional wastewater generation and/ or discharge are prohibited. In Livingston Township, non-discharge areas include the West Essex Reservation and the Riker Hill Complex, both Essex County parks. Additional non-discharge areas are located in the environmentally sensitive areas as delineated on **Maps 1** and **11**.

Coordination and Compliance with the New Jersey Highlands Regional Master Plan

Livingston Township is not located within the New Jersey Highlands Region.

Significant Actions

The Livingston Township WPCF at 81 Naylon Avenue currently discharges into the Passaic River and is regulated under NJPDES Permit No. NJ0024511. In general, the existing Livingston Township WPCF will continue to operate and treat flow tributary to the existing collection system.

Sewer Service Area Changes

The property located at 650 South Orange Avenue (Block 7001, Lot 1.01) falls within both the Livingston SSA (eastern part of property) and the JMEUC SSA (western part of property). The eastern part of the property is currently being developed into apartments and condominiums with a projected wastewater flow of 13,950 gpd. The developer has received Planning Board approval from Livingston Township and Essex County; in addition, they were granted a Motion for Summary Judgment & Injunctive Relief on February 22, 2013 to include the entire property in the Millburn SSA (JMEUC).

Accordingly, the sewer service area has been updated (along the southern Livingston Township boundary) and is shown on **Map 11** and is shown outlined in red on **Figure 1** below.

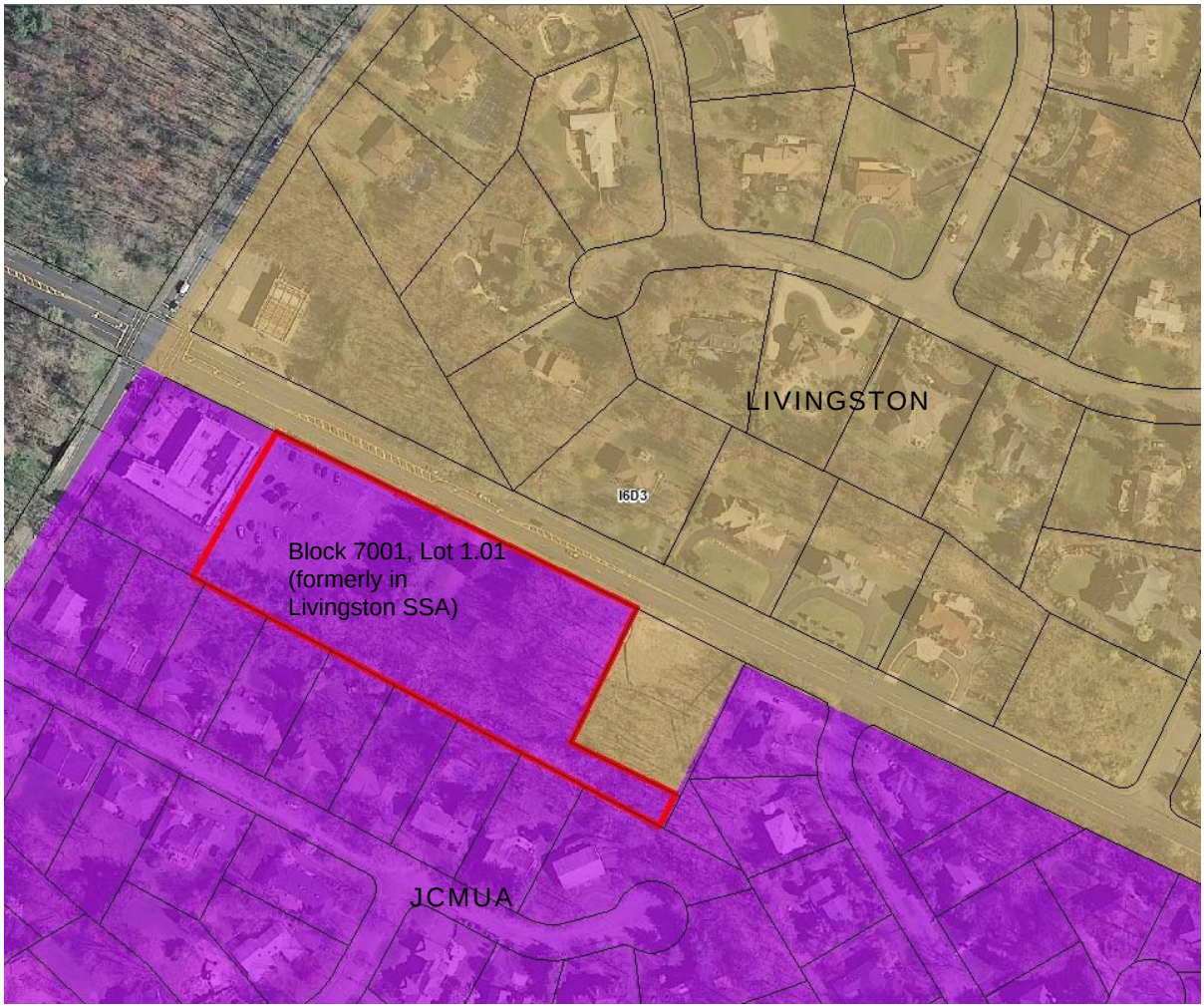


Figure 1: Revisions to Existing Sewer Service Area

Developer Projects

There are four (4) Developers that have requested to connect to the Township's sanitary sewer collection system tributary to the Township's Water Pollution Control Facility. Due to flows at the Township's WPCF exceeding 80% of the permitted flow of 4.60 MGD for the first two calendar quarters of 2011, the Township was required by its New Jersey Pollutant Discharge Elimination System (NJPDES) Permit to participate in the New Jersey Department of Environmental Protection (NJDEP) Capacity Assurance Program. The Township's Capacity Assurance Program requires that "all sewerage connection applicants requesting significant capacity allocation eliminate a flow equivalent to twice its peak sewerage projection by performing I/I removal in the collection system." Therefore, to comply with the Township's Capacity Assurance Program, the four (4) Developers must remove infiltration and inflow (I/I) from the Township's sanitary sewer collection system. The amount that each Developer must remove is summarized in the Table below.

Development	**Units**	**Average Flow (gpd) (1)**	**Peak Flow (gpd) (2)**	**Amount of Extraneous Flow to Remove (gpd) (3)**
Kushner	225	65,000	260,000	520,000
Squiretown (4)	220	45,300	181,200	362,400
Hillside/Northfield	80	16,875	67,500	135,000
Beaufort	12	3,600	14,400	28,800
Totals	**537**	**130,775**	**523,100**	**1,046,200**

Notes:

(1) Average Flows calculated based on NJDEP flow projection criteria for NJDEP Treatment Works Approval (TWA) Permit regulations (N.J.A.C. 7:14A-23.3) and available information for each Development.

(2) A peaking factor of four (4) times the average flow was utilized to calculate the Peak Flow in accordance with NJDEP regulations that require that sanitary sewers "be designed to carry at least twice the estimated average projected flow when flowing half full" (N.J.A.C. 7:14A-23.6).

(3) The Amount of Extraneous Flow to Remove calculated as two (2) times the Peak Flow.

(4) Flow from Clubhouse, swimming pool and Maintenance Building must be added to the flows shown in the above table.

The total amount of extraneous flow to be removed from the Township's wastewater collection system is 1,046,200 gpd as indicated in the table above or approximately 1.05 MGD. It is recommended that a global approach be undertaken to remove infiltration/inflow (I/I) in the locations within the collection system with the highest concentration of I/I. The first step to remove wet weather extraneous flows from the system is to conduct a wet weather extraneous flow investigation as described below.

Section III of the Land Use Plan Element of The Township of Livingston Master Plan (adopted December 2007) contains language stating that there are several anomalies in the Township boundaries that should be examined. In particular, one area to be examined is along the Roseland/Livingston border in the area of Block 2300, Lots 1-7. Lots that are north of I-280 could

potentially be transferred to Roseland in return for those portions of Roseland that are south of I-280, between Livingston Avenue and Laurel Avenue. It is noted that both of those areas are currently served by the Caldwell STP and are not in the Livingston WPCF service area.

Future Wastewater Demand and Facilities

It is noted that all municipalities within Essex County are considered urbanized for the purposes of this WMP. As such, it is appropriate to evaluate future growth in the SSAs using governmental and/or institutional projected demographic data rather than evaluate remaining undeveloped lands. For Livingston Township, in order to evaluate capacity and future sanitary flow rates, a build-out projection was made using 20-year projections for both residential population growth and labor force growth. Data for these projections was obtained from the North Jersey Transportation Planning Authority (NJTPA) municipal forecasts approved on September 10, 2013. Based on the calculated 20-year population figures, estimated residential and non-residential wastewater flows were calculated based on the following:

Residential build-out flows are based on the Water Quality Management Plan rules published in NJAC 7:15. These rules direct urban based build-outs to use **75 gpd/capita** for residential sewage.

Non-residential build-out flows were based on the following:

- 0.1 gpd/SF per NJAC 7:14A-23.1; and
- Office space is 250 SF per employee per the "Building Owners and Managers Association Guidelines" (BOMA) Standard Method for Measuring Office Floor Area

Therefore, non-residential sewage is estimated at:

(0.1 gpd/SF)*(250 SF/employee) = **25 gpd/employee**

Sewer Service Area Wastewater Capacity Analysis

Table 2 presents the results of the Build-out Analysis for Livingston Township. The table identifies the current NJDPES permit flow of the Livingston Township WPCF at 4.6 MGD. The most current 12 months of existing WPCF monthly average 30-day flow is 2.868 MGD, based upon flow data from December 2012 through November 2013 (from NJDEP). As stated above, four developers have requested to connect to the Township's sanitary sewer collection system. The average daily flow totals 0.131 mgd from these four developments. It is assumed that these developments are included in the NJTPA projections and therefore, anticipated future flow is based upon the 20-year projection described above.

Livingston's residential population is anticipated to increase by 2,425 people in the next 20 years. At 75 gpd/capita, this equates to 0.182 gpd. Livingston's employment population is anticipated to increase by 1,510 in the next 20 years. At 25 gpd/employee, this equates to 0.038 gpd. The total projected build-out flow (projected development) is noted in **Table 2** as 0.220 MGD.

The buildout analysis shows the 20-year buildout flow (the total of the existing Livingston WPCF flows and future flow) is 3.088 MGD. When compared to the current NJPDES permit capacity of the Livingston STP of 4.6 MGD, the analysis demonstrates a capacity surplus of 1.512 MGD.

Table 2: Livingston Township Build-out Table (SSAs)

Wastewater Treatment Facility			Build-out Flow				WWTP	
Major Public Wastewater Treatment Facility	**Capacity Allocation/ Permitted Capacity (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)**	**Total Projected Build-out Flow (mgd)**	**Total Projected 2033 Flow (mgd)**	**Remaining Capacity (mgd)**
Livingston WPCF	4.6	2.868[1]	0	0.182	0.038	0.220	3.088	1.512

[1] This is the current 12 month annual average for 12/1/12 to 11/30/13.

Note: A separate portion of the build-out flow is tributary to the Caldwell STP, Parsippany-Troy Hills STP and JMEUC and is included in separate chapters. The flows in the above table are all tributary to the Livingston WPCF.

To date, none of the four developers have applied for Treatment Works Approvals (TWAs).

Based on **Table 2**, the Livingston Township WPCF has sufficient wastewater treatment capacity to match the expected build-out potential within the Township.

General Service Area Wastewater Capacity Analysis

Various minimum lot areas are required for a single dwelling unit, or other development within Livingston Township dependent on zoning. N.J.S.A. 58: 11-25 of the Realty Improvement Sewerage and Facilities Act grants the approval for construction and installation of an Individual Subsurface Sewage Disposal System (ISSDS) by the local Administrative Authority. As provided under N.J.A.C. 7:9A the standards for the proper location, design, and minimum separation distance between the various components of the system and the other features would render the local approval for the construction of an ISSDS on smaller lots exceedingly difficult. As the use of ISSDS as an onsite treatment alternative may not be permissible on the minimum lot size parcels within Livingston Township, the Department has recognized the stated intent of Livingston Township is to provide sewer service within the entire designated planning area to the maximum extent allowable under the conformance of federal waiver or mapping revision process. Consequently, all proposed subdivisions resulting in six (6) or more dwelling units within those areas of Livingston Township that are outside of the proposed sewer service area shall require an amendment. As part of the amendment review process, the analysis to evaluate the groundwater impacts and septic systems density must be conducted. As a result, the Nitrate Dilution Model analysis was not required as part of the review of the Essex County WMP.

Water Supply Demand

Pursuant to N.J.A.C. 7:15-5.25(f), a water supply analysis is required to demonstrate that the water supply needs associated with existing and future development do not conflict with the current New Jersey State Water Supply Plan. The current New Jersey State Water Supply Plan was adopted in August 1996.

Livingston's water supply comes from 12 groundwater wells owned by the Township of Livingston and treated surface water purchased from the New Jersey American Water Company (NJAWC; NJ0712001) for a total monthly limit of 181.490 MGM (148.800 MGM allocation + 32.690 MGM contract limit). Livingston has a firm capacity of 5.563 MGD. Firm capacity is defined as "adequate pumping equipment and/or treatment capacity (excluding coagulation, flocculation, and sedimentation) to meet peak daily demand when the largest pumping station or treatment unit is out of service." The existing total peak daily demand (including committed peak) is 6.290 MGD, where committed peak is calculated as follows:

[(Projected Residential average daily demand) + (Projected Non-residential average daily demand)] * 3.0

where:

Projected Residential Average Daily Demand (ADD) was calculated according to the State of NJ Division of Consumer Affairs (DCA's) Residential Site Improvement Standards (RSIS), N.J.A.C. 5:21-5.2(d) at **100 gpd/capita**.

Non-residential ADD was based on N.J.A.C. 7:10-12.6(b) for office space, Table 1:

- 0.125 gpd/SF; and
- Office space is 250 SF per employee per the "Building Owners and Managers Association Guidelines" (BOMA) Standard Method for Measuring Office Floor Area

Therefore, non-residential ADD is estimated at:

(0.125 gpd/SF)*(250 SF/employee) = **31.25 gpd/employee**

Livingston's residential population is anticipated to increase by 2,424 people in the next 20 years. At 100 gpd/capita, this equates to 0.242 MGD. Livingston's employment population is anticipated to increase by 1,510 in the next 20 years. At 31.25 gpd/employee, this equates to 0.047 MGD. Therefore, the total projected build-out ADD is estimated at 0.290 MGD.

For the purposes of water supply projections, the NJDEP uses a greater per capita flow than RSIS. These different per capita flow rates account for the difference in sewer and water projections within this chapter.

According to the NJDEP Public Water System Deficit/Surplus Analysis (updated December 2013) Livingston currently has a water supply deficit of 12.142 MGM and a firm capacity deficit of 0.727 MGD. In order to update the water supply and firm capacity surplus/deficit for future demands, multipliers were applied to the projected build-out ADD in accordance with the NJDEP Firm Capacity and Water Allocation Analysis as follows:

Firm Capacity Surplus/Deficit Calculation:

Assuming the future development as "committed peak," a peaking factor of 3.0 was applied to the projected build-out ADD. **Table 3** shows Peak Demand due to Future Development at 0.869 MGD. [0.290 MGD * 3.0 = 0.869 MGD]

The projected peak daily demand (0.869 MGD) was added to the existing peak daily demand (6.290 MGD)and then subtracted from the existing firm capacity (5.563 MGD) to calculate the firm capacity surplus/deficit (1.596 MGD deficit).

Water Supply Surplus/Deficit Calculation:

Assuming the future development as "committed peak," a peaking factor of 1.5 was applied to the projected build-out ADD and then multiplied by 31 days. **Table 3** shows Peak Demand due to Future Development at 13.466 MGD. [0.290 MGD * 1.5 * 31 = 13.466 MGM]

The projected peak monthly demand (13.466 MGM) was added to the existing peak monthly demand (193.632 MGM) and then subtracted from the existing allocation/contract amount (181.490 MGM) to calculate the water supply surplus/deficit (25.608 MGM deficit).

Additional water demands due to future development will further increase both the firm capacity deficit and water supply deficit. Therefore, based on the information in **Table 3** below, a water supply shortage is indicated.

It is noted in the NJDEP Public Water System Deficit/Surplus Analysis that the contract for bulk water purchase from NJAWC is under review. In addition, the Township has submitted two backup well permit applications for review. Regional water supplies should be sufficient to cover any of the Township's water demands subject to the necessary agreements being executed. Refer to **Appendix N** for the Livingston NJDEP Public Water System Deficit/Surplus Analysis.

Table 3 – Livingston Township Water Supply Demand by PWSID

PWSID	Purveyor	Water Allocation + Contract Limit (MGM)	Firm Capacity (MGD)	Peak Daily Demand (MGD)	Total Peak Monthly Demand (MGM)	Firm Capacity Deficit/Surplus (MGD)	Water Supply Deficit/Surplus (MGM)	Year
0710001	Livingston Water Dept.	181.490	5.563	6.290[1]	193.632[1]	-0.727	-12.142	2013
Peak Demand Due to Future Development (MGD)				0.869	13.466			
				7.159	207.098	-1.596	-25.608	2033

[1]Peak Daily Demand and Total Peak Monthly Demand have been obtained from the NJDEP Division of Water Supply and Geoscience website (refer to appendix). For conservative purposes, the committed peak flows have been included in the existing condition. It may be possible that a portion of this committed peak should be included in the future development values in this table. The noted deficit is more of a water supply contract matter than a real supply deficit, but should still be addressed.

Model Ordinances

Table 4 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.

Table 4 – Summary of Ordinance Adoption

Ordinance	**Date Adopted**	**Complies with NJAC 7:15**	**Comments and More Protective Standards**
Stormwater Management (Ground Water Recharge Maintenance)	2004-2009	YES	NO
Riparian Zone Protection	NO	NO	NO
Steep Slope Protection	NO	NO	NO
Septic System Maintenance	NO	NO	NO
Dry Conveyances in Sewer Service Area	NO	NO	NO
Septic Connection in Sewer Service Area	11/15/1979	NO	NO

Township of Maplewood

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

The Township of Maplewood is located within the Joint Meeting Essex & Union Counties wastewater service area (NJ0024741) and, thus, is addressed in the Joint Meeting Essex & Union Counties Wastewater Management Plan, which is currently going through the adoption process.

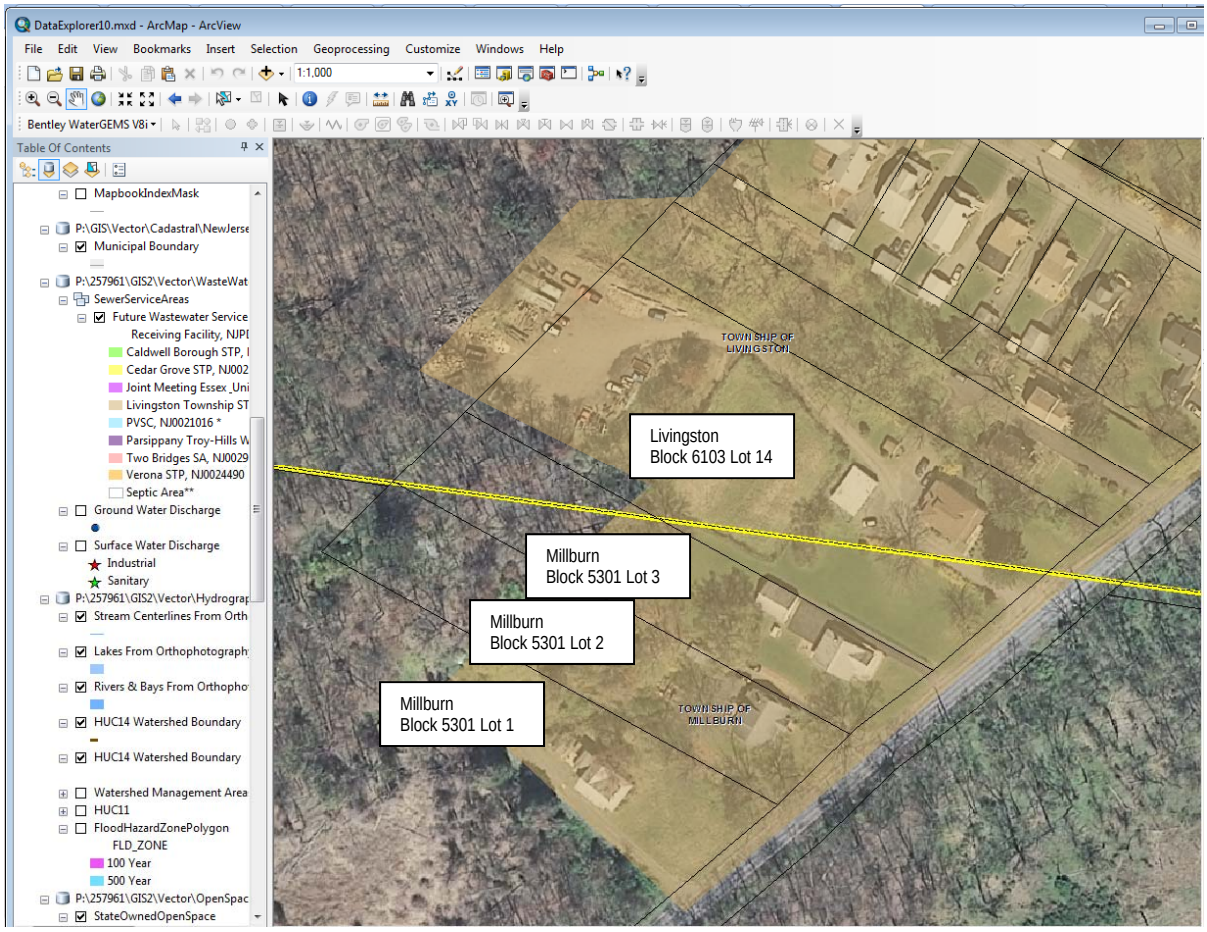
Township of Millburn

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

The Township of Millburn is located within the Joint Meeting Essex & Union Counties wastewater service area (NJ0024741) and, thus, is addressed in the Joint Meeting Essex & Union Counties Wastewater Management Plan, which is currently going through the adoption process.

There is a small portion of land along the northwest Township boundary in Millburn that is in the Livingston sewer service area. Refer to the Exhibit below for a depiction of the applicable parcels.

Exhibit 1: Millburn parcels in Livingston SSA



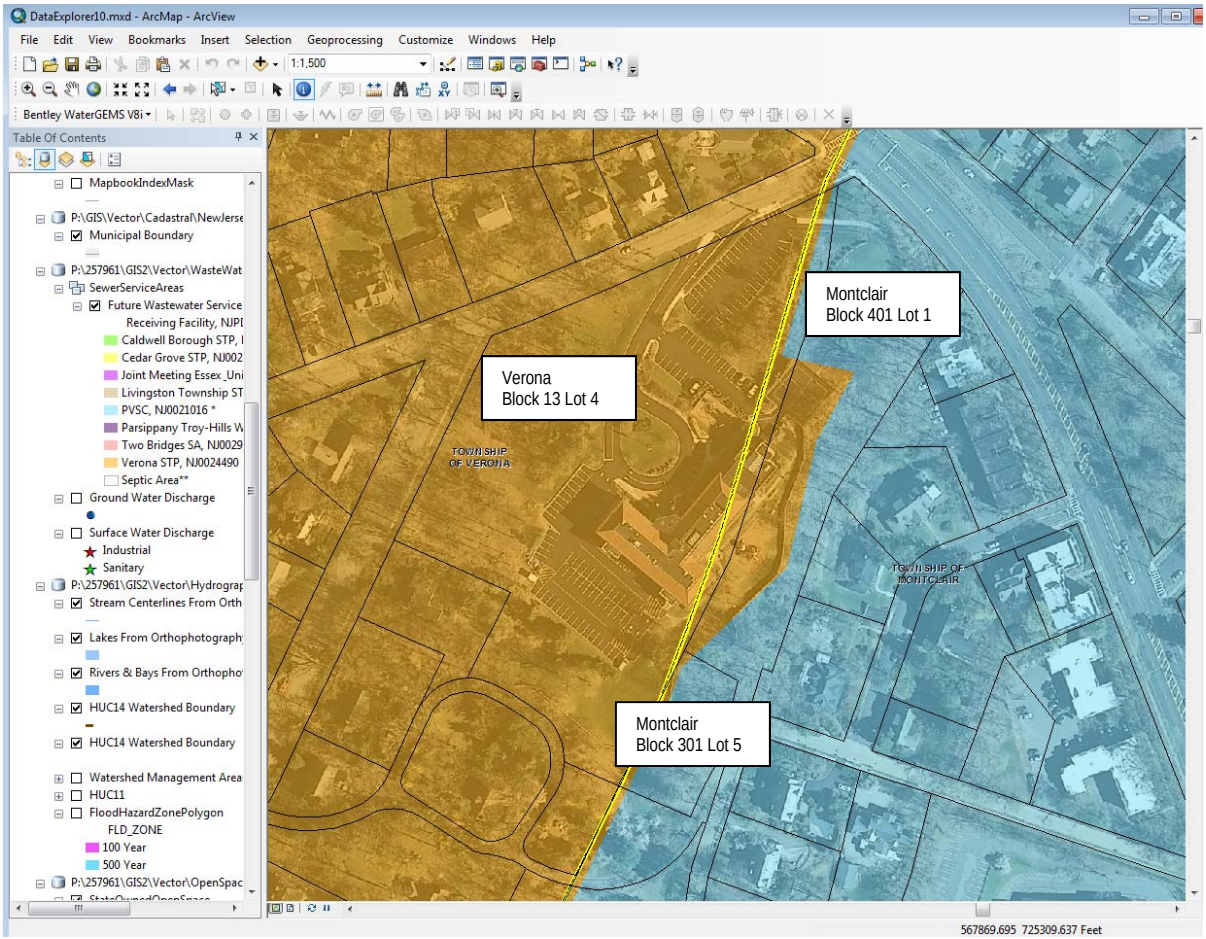
Township of Montclair

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

The Township of Montclair is located within the Passaic Valley Sewer Commission service area (NJ0021016) and, thus, is addressed in the Passaic Valley Sewer Commission Wastewater Management Plan approved on December 8, 2008. A small portion of the Township is also served by the Joint Meeting Essex & Union Counties (NJ0024741) and is addressed in the Joint Meeting Essex & Union Counties Wastewater Management Plan, which is currently going through the adoption process.

There is a small portion of land in Montclair that is in the Verona sewer service area. Both parcels of land that are in the Verona sewer service area (Block 401, Lot 1 & Block 301, Lot 5) are both owned by The Children's Institute, who also own the larger parcel in Verona (Block 13, Lot 4). It is not anticipated that there will be any additional development within the Township of Montclair on either of the Montclair parcels, due to their ownership. Refer to the Exhibit below for a depiction of the applicable parcels.

Exhibit 1: Montclair parcels in Verona SSA



City of Newark

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

The majority of the City of Newark is located within the Passaic Valley Sewer Commission service area (NJ0021016) and, thus, is addressed in the Passaic Valley Sewer Commission Wastewater Management Plan approved on December 8, 2008. A portion of the western part of the City is served by the Joint Meeting Essex & Union Counties (NJ0024741) and is addressed in the Joint Meeting Essex & Union Counties Wastewater Management Plan, which is currently going through the adoption process.

Borough of North Caldwell

Introduction

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

The Borough of North Caldwell was incorporated in 1898, from portions of what is now Fairfield Township. North Caldwell Borough is located in the northwestern portion of Essex County and encompasses approximately 3 square miles. The Borough is zoned mostly residential, however it contains open space, conservation lands, government/institution lands and mixed use. The Borough zoning designations are shown on **Map 10**.

The Census Bureau population count for North Caldwell Borough was 6,180 in 2010 (extrapolated to 6,247 in 2013). In year 2000, the population was 7,375; therefore the Township population has decreased by approximately 15.3% over the last 13 years.

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

- Borough of North Caldwell is considered an urbanized municipality.
- The municipality is not located within the Highlands Region.

Existing Infrastructure

The existing wastewater collection and conveyance infrastructure within this municipality consists of the following:

- Collection System – Borough of North Caldwell is generally developed throughout its borders with the exception of conservation lands and environmentally constrained lands. The Borough's wastewater collection system includes over 35 miles of gravity sewer and force main. The wastewater collection system conveys sewage to the Caldwell Sewage Treatment Plant (STP; NJ0020427) located in West Caldwell Township and a small portion is conveyed to the Verona STP (NJ0025330).
- Pumping Stations – The wastewater collection system also includes two (2) pump stations within the North Caldwell Borough borders.

There are no existing major wastewater treatment facilities located within the municipality. Further, there are no minor facilities that discharge to surface water (DSW) or groundwater (DGW).

Environmental and Other Land Features

The countywide Environmental Features are shown on **Maps 4** through **9**.

The Hilltop Reservation, part of the Essex County Department of Parks, Recreation and Cultural Affairs (also known as the Essex County Park System), is present in the southern part of the Borough, in addition to Hilltop Park. The Green Brook Country Club golf course is present in the western part of the Borough. Riparian buffer and some wetlands and flood prone areas are present along Green Brook along with steep slopes along the northern portion of the Borough resulting from the 2nd Watchung Mountain.

Delineation of Service Areas and Planning Integration

Sewer Service Areas

The existing areas served and future SSAs within Borough of North Caldwell are shown on **Maps 1** and **11**, respectively. Wastewater in the Borough is conveyed to the Caldwell STP and a small portion in the south of the Borough is conveyed to the Verona STP. The facilities providing treatment to this service area have associated facilities tables in **Appendix C**.

General Service Area

General Service Areas (GSAs) consist of those areas with discharges to groundwater of less than 2,000 gallons per day (i.e. individual subsurface sewage disposal systems a/k/a residential septic systems) that are neither designated for sewer service nor as non-discharge areas. A general service area for individual subsurface sewage disposal systems has not been established in North Caldwell.

Non-discharge areas are areas where additional wastewater generation and/ or discharge are prohibited. In Borough of North Caldwell, non-discharge areas include the Hilltop Reservation and Green Brook Country Club golf course, as delineated on **Maps 1** and **11**.

Coordination and Compliance with the New Jersey Highlands Regional Master Plan

The Borough of North Caldwell is not located within the New Jersey Highlands Region.

Significant Actions

Two sewer service areas in North Caldwell were edited to show the correct existing boundaries. That is, there were no changes to the actual sewer service provided to each area, but the map boundaries were corrected to reflect actual conditions. Both areas are located along the northern border of North Caldwell. The areas are as follows:

- The area bounded by Grandview Ave. on the south and Fairfield Road/municipal boundary on the north is actually served by Two Bridges Sewer Authority (TBSA). The revised SSA is reflected on **Map 11**.

- The area north of Birchwood Rd. and bounded by Grandview Ave. on the west is actually served by the Passaic Valley Sewerage Authority (PVSC). The revised SSA is reflected on **Map 11**.

Both revisions are outlined in red on **Figure 1**, below.

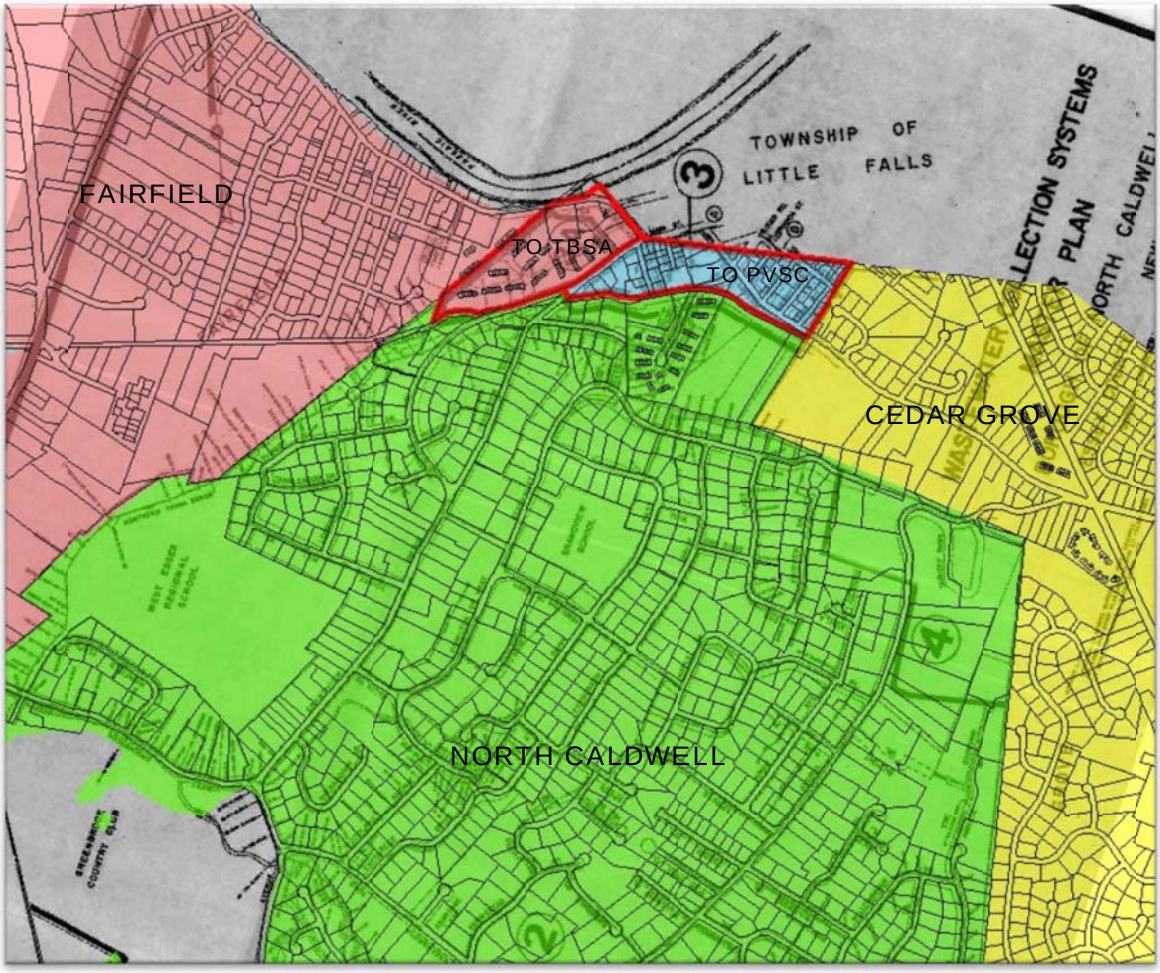


Figure 1: Corrections to Existing Sewer Service Areas in North Caldwell

Redevelopment is planned within the Verona SSA at the site of the former Essex County Penitentiary. The Four Seasons at North Caldwell active adult community is currently under construction on roughly 17 acres of the former penitentiary site. The community will contain 108 two-bedroom single floor residences. Approximately 80 percent of the units are occupied, leaving 20 percent for future development.

In August 2013, an ordinance was passed by the Borough of North Caldwell approving the Amended Redevelopment Plan for the remaining 36 acres of the penitentiary site. The Amended

Redevelopment Plan established two new zoning districts, the single family R-8 District (minimum 8,640 sq. ft.) and the Affordable Housing District. In total, the ordinance approved 62 single family homes and 50 affordable housing units (apartments).

Future Wastewater Demand and Facilities

It is noted that all municipalities within Essex County are considered urbanized for the purposes of this WMP. As such, it is appropriate to evaluate future growth in the SSAs using governmental and/or institutional projected demographic data rather than evaluate remaining undeveloped lands. For Borough of North Caldwell, in order to evaluate capacity and future sanitary flow rates, a build-out projection was made using 20-year projections for both residential population growth and labor force growth. Data for these projections was obtained from the North Jersey Transportation Planning Authority (NJTPA) municipal forecasts approved on September 10, 2013 and is provided in **Appendix M**. Based on the calculated 20-year population figures, estimated residential and non-residential wastewater flows were calculated based on the following:

Residential build-out flows are based on the Water Quality Management Plan rules published in NJAC 7:15. These rules direct urban based build-outs to use **75 gpd/capita** for single family home residential sewage. Build-out flows for 3-bedroom apartments were based on NJAC 7:14A-23.3 at **300 gpd/apartment**; build-out flows for 2-bedroom retirement housing was also based on NJAC 7:14A-23.3 at **170 gpd/residence**.

Non-residential build-out flows were based on the following:

- 0.1 gpd/SF per NJAC 7:14A-23.1; and
- Office space is 250 SF per employee per the “Building Owners and Managers Association Guidelines“ (BOMA) Standard Method for Measuring Office Floor Area

Therefore, non-residential sewage is estimated at:

(0.1 gpd/SF)*(250 SF/employee) = **25 gpd/employee**

Sewer Service Area Wastewater Capacity Analysis

Table 1 presents the results of the Build-out Analysis for Borough of North Caldwell. The table identifies the current NJDPES permit flow of the Caldwell STP at 4.6 MGD. The most current 12 months of existing STP monthly average 30-day flow is 4.088 MGD, based upon flow data from December 2012 through November 2013 (from NJDEP). It is unknown if there are any Treatment Works Approvals (TWAs) approved by NJDEP for unconnected projects within the Borough of North Caldwell, so the only other anticipated future flow is based upon the 20-year projection described above.

Redevelopment is planned at the site of the former Essex County Penitentiary, which is tributary to the Verona STP. The Four Seasons at North Caldwell active adult community is currently under construction on roughly 17 acres of the former penitentiary site. The community will contain 108 two-

bedroom single floor residences. Approximately 80 percent of the units are occupied, leaving 20 percent for future development. Using 170 gpd/residence per NJAC 7:14A-23.3, future residential wastewater flows from this development are estimated at 3,672 gpd.

In August 2013, an ordinance was passed by the Borough of North Caldwell approving the Amended Redevelopment Plan for the remaining 36 acres of the penitentiary site. The Amended Redevelopment Plan established two new zoning districts, the single family R-8 District (minimum 8,640 sq. ft.) and the Affordable Housing District. In total, the ordinance approved 62 single family homes and 50 affordable housing units (apartments). At 2.96 people/household (per the 2010 Census) and 75 gpd/capita, future residential wastewater flows are estimated at 13,764 gpd for the single family homes. Assuming 3 bedroom apartments (worst case scenario), at 300 gpd/apartment per NJAC 7:14A-23.3, the affordable housing build-out flows were estimated at 15,000 gpd.

The total future wastewater flows from the remaining redevelopment at the former penitentiary site is estimated at 32,436 gpd. Based on the number of single family homes and apartments, and using 2.96 people/household (per the 2010 Census), the total population growth tributary to the Verona STP is estimated at 375 people.

Overall, the Borough's residential population is anticipated to increase by 467 people in the next 20 years. Assuming that the redevelopment at the former penitentiary site is included in the NJTPA population projections, there are a net 92 persons projected in the Caldwell STP service area in the next 20 years. At 75 gpd/capita, this equates to 0.007 MGD. The Borough's employment population is anticipated to increase by 140 in the next 20 years. At 25 gpd/employee, this equates to 0.004 MGD. The total projected build-out flow in the Caldwell STP SSA (from new projected development) is noted in **Table 1** as 0.010 MGD.

It is noted that the flowrate attributed to these new developments and tributary to the Verona STP is estimated at 0.032 MGD. Refer to the Verona chapter regarding total tributary build-out flows vs. the Verona STP capacity. Refer to the Borough of West Caldwell chapter regarding total tributary build-out flows vs. the Caldwell STP capacity.

Table 1: Borough of North Caldwell Build-out Table (SSAs)

Wastewater Treatment Facility			Build-out Flow				WWTP	
Major Public Wastewater Treatment Facility	**Capacity Allocation/ Permitted Capacity (mgd)**	**Total Existing Flow (mgd)**	**Total Flow Attributed to TWAs Approved But Unconnected (mgd)**	**North Caldwell Residential Build-out Flow (mgd)**	**North Caldwell Non-Residential Build-out Flow (mgd)**	**Total North Caldwell Projected Build-out Flow (mgd)**	**Total Projected 2033 Flow (mgd)**	**Remaining Capacity (mgd)**
Caldwell STP	4.6	4.088[1]	0	0.007	0.004	0.010	n/a	n/a
Verona STP	3.0	1.401[1]	0	0.032	0	0.032	1.564	1.436

[1] This is the current 12 month annual average for 12/1/12 to 11/30/13.

Note: Municipalities tributary to the Caldwell STP include Borough of Caldwell, Borough of Roseland, Borough of Essex Fells, Borough of North Caldwell, Township of West Caldwell, Township of Fairfield, Township of Verona, Township of Livingston and Township of West Orange. Refer to the Borough of West Caldwell chapter (Table 1) regarding total tributary build-out flows vs. Caldwell STP capacity. Refer to the Township of Verona chapter (Table 1) regarding total tributary build-out flows.

General Service Area Wastewater Capacity Analysis

Various minimum lot areas are required for a single dwelling unit, or other development within the Borough of North Caldwell dependent on zoning. N.J.S.A. 58: 11-25 of the Realty Improvement Sewerage and Facilities Act grants the approval for construction and installation of an Individual Subsurface Sewage Disposal System (ISSDS) by the local Administrative Authority. As provided under N.J.A.C. 7:9A the standards for the proper location, design, and minimum separation distance between the various components of the system and the other features would render the local approval for the construction of an ISSDS on smaller lots exceedingly difficult. As the use of ISSDS as an onsite treatment alternative may not be permissible on the minimum lot size parcels within the Borough of North Caldwell, the Department has recognized the stated intent of the Borough of North Caldwell is to provide sewer service within the entire designated planning area to the maximum extent allowable under the conformance of federal waiver or mapping revision process. Consequently, all proposed subdivisions resulting in six (6) or more dwelling units within those areas of the Borough of North Caldwell that are outside of the proposed sewer service area shall require an amendment. As part of the amendment review process, the analysis to evaluate the groundwater impacts and septic systems density must be conducted. As a result, the Nitrate Dilution Model analysis was not required as part of the review of the Essex County WMP.

Water Supply Demand

Pursuant to N.J.A.C. 7:15-5.25(f), a water supply analysis is required to demonstrate that the water supply needs associated with existing and future development do not conflict with the current New Jersey State Water Supply Plan. The current New Jersey State Water Supply Plan was adopted in August 1996.

North Caldwell purchases water from Essex Fells (NJ0706001) and Passaic Valley Water Commission (PVWC; NJ1605002). According to the NJDEP Public Water System Deficit/Surplus Analysis (updated December 2013), the bulk purchase contract with the Essex Fells Water Department has expired. NJDEP further indicates that North Caldwell also has a 1.0 MGD contract with PVWC that expires on April 30, 2016. The firm capacity based on the interconnection capacity with PVWC is 1.000 MGD and the total monthly limit (contract amount) is 31.000 MGM. Firm capacity is defined as “adequate pumping equipment and/or treatment capacity (excluding coagulation, flocculation, and sedimentation) to meet peak daily demand when the largest pumping station or treatment unit is out of service.” The existing total peak daily demand (including committed peak) is 1.656 MGD, where committed peak is calculated as follows:

[(Projected Residential average daily demand) + (Projected Non-residential average daily demand)] * 3.0

where:

Projected Residential Average Daily Demand (ADD) was calculated according to the State of NJ Division of Consumer Affairs (DCA’s) Residential Site Improvement Standards (RSIS), N.J.A.C. 5:21-5.2(d) at **100 gpd/capita**.

Non-residential ADD was based on N.J.A.C. 7:10-12.6(b) for office space, Table 1:

- 0.125 gpd/SF; and
- Office space is 250 SF per employee per the "Building Owners and Managers Association Guidelines" (BOMA) Standard Method for Measuring Office Floor Area

Therefore, non-residential ADD is estimated at:

(0.125 gpd/SF)*(250 SF/employee) = **31.25 gpd/employee**

North Caldwell's residential population is anticipated to increase by 467 people in the next 20 years. At 100 gpd/capita, this equates to 0.047 MGD. North Caldwell's employment population is anticipated to increase by 140 in the next 20 years. At 31.25 gpd/employee, this equates to 0.004 MGD. Therefore, the total projected build-out ADD is estimated at 0.051 MGD.

For the purposes of water supply projections, the NJDEP uses a greater per capita flow than RSIS. These different per capita flow rates account for the difference in sewer and water projections within this chapter.

According to the NJDEP Public Water System Deficit/Surplus Analysis, North Caldwell currently has a water supply deficit of 19.972 MGM and a firm capacity deficit of 0.656 MGD. In order to update the water supply and firm capacity surplus/deficit for future demands, multipliers were applied to the projected build-out ADD in accordance with the NJDEP Firm Capacity and Water Allocation Analysis as follows:

Firm Capacity Surplus/Deficit Calculation:

Assuming the future development as "committed peak," a peaking factor of 3.0 was applied to the projected build-out ADD. **Table 2** shows Peak Demand due to Future Development at 0.153 MGD. [0.051 MGD * 3.0 = 0.153 MGD]

The projected peak daily demand (0.153 MGD) was added to the existing peak daily demand (1.656 MGD)and then subtracted from the existing firm capacity (1.000 MGD) to calculate the firm capacity surplus/deficit (0.809 MGD deficit).

Water Supply Surplus/Deficit Calculation:

Assuming the future development as "committed peak," a peaking factor of 1.5 was applied to the projected build-out ADD and then multiplied by 31 days. **Table 2** shows Peak Demand due to Future Development at 2.375 MGD. [0.051 MGD * 1.5 * 31 = 2.375 MGM]

The projected peak monthly demand (2.375 MGM) was added to the existing peak monthly demand (50.972 MGM) and then subtracted from the existing contract limit (31.000 MGM) to calculate the water supply surplus/deficit (22.347 MGM deficit).

Additional water demands due to future development will further increase the water supply deficit and the firm capacity deficit. Therefore, based on the information in **Table 2** below, a water supply

shortage is indicated. Regional water supplies should be sufficient to cover any of the Township's water demands subject to the necessary agreements being executed. Refer to **Appendix N** for the North Caldwell Water Department NJDEP Public Water System Deficit/Surplus Analysis.

Table 2 – North Caldwell Water Department Water Supply Demand by PWSID

PWSID	Purveyor	Monthly Contract Limit (MGM)	Firm Capacity (MGD)	Peak Daily Demand (MGD)	Total Peak Monthly Demand (MGM)	Firm Capacity Deficit/Surplus (MGD)	Water Supply Deficit/Surplus (MGM)	Year
0715001	North Caldwell Water Dept.	31.000	1.000	1.656[1]	50.972[1]	-0.656	-19.972	2013
Peak Demand Due to Future Development (MGD)				0.153	2.375			
				1.809	53.347	-0.809	-22.347	2033

[1]Peak Daily Demand and Total Peak Monthly Demand have been obtained from the NJDEP Division of Water Supply and Geoscience website (refer to appendix). For conservative purposes, the committed peak flows have been included in the existing condition. It may be possible that a portion of this committed peak should be included in the future development values in this table. The noted deficit is more of a water supply contract matter than a real supply deficit, but should still be addressed.

Model Ordinances

Table 4 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.

Table 4 – Summary of Ordinance Adoption

Ordinance	**Date Adopted**	**Complies with NJAC 7:15**	**Comments and More Protective Standards**
Stormwater Management (Ground Water Recharge Maintenance)	2004-2009	YES	NO
Riparian Zone Protection	NO	NO	NO
Steep Slope Protection	NO	NO	NO
Septic System Maintenance	NO	NO	NO
Dry Conveyances in Sewer Service Area	NO	NO	NO
Septic Connection in Sewer Service Area	NO	NO	NO

Township of Nutley

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

The Township of Nutley is located within the Passaic Valley Sewer Commission service area (NJ0021016) and, thus, is addressed in the Passaic Valley Sewer Commission Wastewater Management Plan approved on December 8, 2008.

Borough of Roseland

Introduction

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

Roseland Borough is located in the Western portion of Essex County. Roseland was incorporated as a borough in 1908 from portions of Livingston Township. The Borough is approximately 3.56 square miles and is home to Becker Park. The Borough is a mix of residential, commercial, light industrial and conservation lands. The Borough zoning designations are shown on **Map 10**.

The Census Bureau population count for Roseland Borough was 5,820 in 2010 (extrapolated to 5,887 in 2013). In year 2000, the population was 5,298; therefore the Township population has grown by approximately 11% over the last 13 years.

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

- Borough of Roseland is considered an urbanized municipality.
- The municipality is not located within the Highlands Region.

Existing Infrastructure

The existing wastewater collection and conveyance infrastructure within this municipality consists of the following:

- Collection System – Borough of Roseland is generally developed throughout its borders with the exception of conservation and environmentally constrained lands. The Township's wastewater collection system includes over 23 miles of gravity sewer and force main. The wastewater collection system conveys sewage to the Caldwell Sewage Treatment Plant (STP) (NJPDES 0020427) located in West Caldwell Township.
- Pumping Stations – The wastewater collection system includes three (3) pump stations within the Roseland Borough borders.

Table 1 presents additional minor facilities that discharge to surface water (DSW) in the Borough. These facilities are regulated through NJDEP and have individual New Jersey Pollutant Discharge Elimination System (NJPDES) discharge permits. There are no facilities that discharge to groundwater. The existing treatment facilities are illustrated on **Map 1**.

Table 1: Additional NJPDES (DSW) Minor Permitted Facilities within the Borough of Roseland

NJPDES Permit Number	Facility Name	Permit Program Code	Receiving Stream or Aquifer	Classification	Contact Organization Name	Block	Lot	Permitted Flow (mgd)	Existing Flow[1] (mgd)	Future Flow[1] (mgd)	Discharge Category[2]
NJ0003743	B&G Foods	SW	Foulerton's Brook	FW2-NT	B&G Foods	11	30	0.016	0.015	0.015	Minor Wastewater

[1]Flow indicated is monthly average flow
[2]Non-contact cooling water

Environmental and Other Land Features

The countywide Environmental Features are shown on **Maps 4** through **9**.

The western portion of the Township contains various environmental and land features including natural heritage priority sites, state threatened and endangered species, open space, riparian buffers, wetlands and flood zones. Additional wetlands are present along Foulerton's Branch North and there are some steep slopes present in the eastern part of the Borough.

Delineation of Service Areas and Planning Integration

Sewer Service Areas

The existing areas served and future SSAs within Borough of Roseland are shown on **Maps 1** and **11**, respectively. Wastewater in the Borough is conveyed to the Caldwell STP. The facilities providing treatment to this service area have associated facilities tables in **Appendix C**.

General Service Area

General Service Areas (GSAs) consist of those areas with discharges to groundwater of less than 2,000 gallons per day (i.e. individual subsurface sewage disposal systems a/k/a residential septic systems) that are neither designated for sewer service nor as non-discharge areas. A general service area for individual subsurface sewage disposal systems has not been established in Roseland.

Non-discharge areas are areas where additional wastewater generation and/ or discharge are prohibited. In Borough of Roseland, non-discharge areas generally include Becker Park and the wetlands/flood areas, as delineated on **Maps 1** and **11**.

Coordination and Compliance with the New Jersey Highlands Regional Master Plan

Borough of Roseland is not located within the New Jersey Highlands Region.

Significant Actions

There are no significant actions proposed as a part of this WMP.

Future Wastewater Demand and Facilities

It is noted that all municipalities within Essex County are considered urbanized for the purposes of this WMP. As such, it is appropriate to evaluate future growth in the SSAs using governmental and/or institutional projected demographic data rather than evaluate remaining undeveloped lands. For Borough of Roseland, in order to evaluate capacity and future sanitary flow rates, a build-out projection was made using 20-year projections for both residential population growth and labor force growth. Data for these projections was obtained from the North Jersey Transportation Planning Authority (NJTPA) municipal forecasts approved on September 10, 2013 and is provided in

Appendix M. Based on the calculated 20-year population figures, estimated residential and non-residential wastewater flows were calculated based on the following:

Residential build-out flows are based on the Water Quality Management Plan rules published in NJAC 7:15. These rules direct urban based build-outs to use **75 gpd/capita** for residential sewage.

Non-residential build-out flows were based on the following:

- 0.1 gpd/SF per NJAC 7:14A-23.1; and
- Office space is 250 SF per employee per the "Building Owners and Managers Association Guidelines" (BOMA) Standard Method for Measuring Office Floor Area

Therefore, non-residential sewage is estimated at:

(0.1 gpd/SF)*(250 SF/employee) = **25 gpd/employee**

Sewer Service Area Wastewater Capacity Analysis

Table 2 presents the results of the Build-out Analysis for Borough of Roseland. The table identifies the current NJDPES permit flow of the Caldwell STP at 4.6 MGD. The most current 12 months of existing STP monthly average 30-day flow is 4.088 MGD, based upon flow data from December 2012 through November 2013 (from NJDEP). It is unknown if there are any Treatment Works Approvals (TWAs) approved by NJDEP for unconnected projects within the Borough of Roseland, so the only other anticipated future flow is based upon the 20-year projection described above.

Roseland's residential population is anticipated to increase by 463 people in the next 20 years. At 75 gpd/capita, this equates to 0.035 MGD. Roseland's employment population is anticipated to increase by 679 in the next 20 years. At 25 gpd/employee, this equates to 0.017 MGD. The total projected build-out flow (from new projected development) is noted in **Table 2** as 0.052 MGD.

Refer to the Borough of West Caldwell chapter regarding total tributary build-out flows vs. Caldwell STP capacity.

Table 2: Borough of Roseland Build-out Table (SSAs)

Wastewater Treatment Facility			Build-out Flow				WWTP	
Major Public Wastewater Treatment Facility	**Capacity Allocation/ Permitted Capacity (mgd)**	**Total Existing Flow (mgd)**	**Total Flow Attributed to TWAs Approved But Unconnected (mgd)**	**Roseland Residential Build-out Flow (mgd)**	**Roseland Non-Residential Build-out Flow (mgd)**	**Total Roseland Projected Build-out Flow (mgd)**	**Total Projected 2033 Flow (mgd)**	**Remaining Capacity (mgd)**
Caldwell STP	4.6	4.088[1]	0	0.035	0.017	0.052	n/a	n/a

[1] This is the current 12 month annual average for 12/1/12 to 11/30/13.

Note: Municipalities tributary to the Caldwell STP include Borough of Caldwell, Borough of Roseland, Borough of Essex Fells, Borough of North Caldwell, Township of West Caldwell, Township of Fairfield, Township of Verona and Township of West Orange. Refer to the Borough of West Caldwell chapter (Table 1) regarding total tributary build-out flows vs. Caldwell STP capacity.

General Service Area Wastewater Capacity Analysis

Various minimum lot areas are required for a single dwelling unit, or other development within Borough of Roseland dependent on zoning. N.J.S.A. 58: 11-25 of the Realty Improvement Sewerage and Facilities Act grants the approval for construction and installation of an Individual Subsurface Sewage Disposal System (ISSDS) by the local Administrative Authority. As provided under N.J.A.C. 7:9A the standards for the proper location, design, and minimum separation distance between the various components of the system and the other features would render the local approval for the construction of an ISSDS on smaller lots exceedingly difficult. As the use of ISSDS as an onsite treatment alternative may not be permissible on the minimum lot size parcels within Borough of Roseland, the Department has recognized the stated intent of Borough of Roseland is to provide sewer service within the entire designated planning area to the maximum extent allowable under the conformance of federal waiver or mapping revision process. Consequently, all proposed subdivisions resulting in six (6) or more dwelling units within those areas of Borough of Roseland that are outside of the proposed sewer service area shall require an amendment. As part of the amendment review process, the analysis to evaluate the groundwater impacts and septic systems density must be conducted. As a result, the Nitrate Dilution Model analysis was not required as part of the review of the Essex County WMP.

Water Supply Demand

Pursuant to N.J.A.C. 7:15-5.25(f), a water supply analysis is required to demonstrate that the water supply needs associated with existing and future development do not conflict with the current New Jersey State Water Supply Plan. The current New Jersey State Water Supply Plan was adopted in August 1996.

Roseland purchases water from Essex Fells (NJ0706001), who buys water from the New Jersey American Water Company – Short Hills (NJAWC; NJ0712001). According to the NJDEP Public Water System Deficit/Surplus Analysis (updated December 2013), the bulk purchase contract with the Essex Fells Water Department has not received approval by the Bureau of Water Allocation. NJDEP further indicates that no Water Main Extension Permits will be issued without a current and effective contract. The firm capacity based on the interconnection capacity is 2.22 MGD; 68.2 MGM and 401.5 MGY. Firm capacity is defined as “adequate pumping equipment and/or treatment capacity (excluding coagulation, flocculation, and sedimentation) to meet peak daily demand when the largest pumping station or treatment unit is out of service.” The existing total peak daily demand (including committed peak) is 1.365 MGD, where committed peak is calculated as follows:

[(Projected Residential average daily demand) + (Projected Non-residential average daily demand)] * 3.0

where:

Projected Residential Average Daily Demand (ADD) was calculated according to the State of NJ Division of Consumer Affairs (DCA’s) Residential Site Improvement Standards (RSIS), N.J.A.C. 5:21-5.2(d) at **100 gpd/capita**.

Non-residential ADD was based on N.J.A.C. 7:10-12.6(b) for office space, Table 1:

- 0.125 gpd/SF; and
- Office space is 250 SF per employee per the "Building Owners and Managers Association Guidelines" (BOMA) Standard Method for Measuring Office Floor Area

Therefore, non-residential ADD is estimated at:

(0.125 gpd/SF)*(250 SF/employee) = **31.25 gpd/employee**

Roseland's residential population is anticipated to increase by 463 people in the next 20 years. At 100 gpd/capita, this equates to 0.046 MGD. Roseland's employment population is anticipated to increase by 679 in the next 20 years. At 31.25 gpd/employee, this equates to 0.021 MGD. Therefore, the total projected build-out ADD is estimated at 0.068 MGD.

For the purposes of water supply projections, the NJDEP uses a greater per capita flow than RSIS. These different per capita flow rates account for the difference in sewer and water projections within this chapter.

According to the NJDEP Public Water System Deficit/Surplus Analysis, due to the lack of an existing bulk water purchase contract Roseland currently has a water supply deficit of 42.300 MGM and a firm capacity deficit of 1.365 MGD. Based on the interconnection capacities and assuming that there was a contract in place with Essex Fells, both the firm capacity and water supply would have a surplus.

In order to update the water supply and firm capacity surplus/deficit for future demands, multipliers were applied to the projected build-out ADD in accordance with the NJDEP Firm Capacity and Water Allocation Analysis as follows:

Firm Capacity Surplus/Deficit Calculation:

Assuming the future development as "committed peak," a peaking factor of 3.0 was applied to the projected build-out ADD. **Table 3** shows Peak Demand due to Future Development at 0.203 MGD. [0.068 MGD * 3.0 = 0.203 MGD]

The projected peak daily demand (0.203 MGD) was added to the existing peak daily demand (1.365 MGD)and then subtracted from the existing firm capacity (0.000 MGD) to calculate the firm capacity surplus/deficit (1.568 MGD deficit).

Water Supply Surplus/Deficit Calculation:

Assuming the future development as "committed peak," a peaking factor of 1.5 was applied to the projected build-out ADD and then multiplied by 31 days. **Table 3** shows Peak Demand due to Future Development at 3.140 MGD. [0.068 MGD * 1.5 * 31 = 3.140 MGM]

The projected peak monthly demand (3.140 MGM) was added to the existing peak monthly demand (42.300 MGM) and then subtracted from the existing contract limit (0.000 MGM) to calculate the water supply surplus/deficit (45.440 MGM deficit).

Additional water demands due to future development will further increase the water supply deficit and the firm capacity deficit. Therefore, based on the information in **Table 3** below, a water supply shortage is indicated. Again, assuming the interconnection firm capacities, there would be both a firm capacity and water supply surplus. Refer to **Appendix N** for the Roseland NJDEP Public Water System Deficit/Surplus Analysis.

Table 3 – Borough of Roseland Water Supply Demand by PWSID

PWSID	Purveyor	Contract Limit (MGM)	Firm Capacity (MGD)	Peak Daily Demand (MGD)	Total Peak Monthly Demand (MGM)	Firm Capacity Deficit/Surplus (MGD)	Water Supply Deficit/Surplus (MGM)	Year
0718001	Roseland Water Dept.	0.000	0.000	1.365[1]	42.300[1]	-1.365	-42.300	2013
Peak Demand Due to Future Development (MGD)				0.203	3.140			
				1.568	45.440	-1.568	-45.440	2033

[1]Peak Daily Demand and Total Peak Monthly Demand have been obtained from the NJDEP Division of Water Supply and Geoscience website (refer to appendix). For conservative purposes, the committed peak flows have been included in the existing condition. It may be possible that a portion of this committed peak should be included in the future development values in this table. The noted deficit is more of a water supply contract matter than a real supply deficit, but should still be addressed.

Model Ordinances

Table 4 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.

Table 4 – Summary of Ordinance Adoption

Ordinance	**Date Adopted**	**Complies with NJAC 7:15**	**Comments and More Protective Standards**
Stormwater Management (Ground Water Recharge Maintenance)	2004-2009	YES	NO
Riparian Zone Protection	NO	NO	NO
Steep Slope Protection	NO	NO	NO
Septic System Maintenance	NO	NO	NO
Dry Conveyances in Sewer Service Area	NO	NO	NO
Septic Connection in Sewer Service Area	NO	NO	NO

The Township of South Orange Village

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

The Township of South Orange Village is located within the Joint Meeting Essex & Union Counties wastewater service area (NJ0024741) and, thus, is addressed in the Joint Meeting Essex & Union Counties Wastewater Management Plan, which is currently going through the adoption process. Five lots the Township are also served by the Passaic Valley Sewer Commission (NJ0021016). The Passaic Valley Sewer Commission Wastewater Management Plan was approved on December 8, 2008.

Verona Township

Introduction

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

Verona Township was originally a part of Newark and then Caldwell Township, until it was incorporated as the Borough of Verona in 1907 (and later became Verona Township). Verona Township is located in the northern portion of Essex County and encompasses approximately 2.8 square miles. The Township is home to the Hilltop Reservation and Verona Park, both part of the Essex County Department of Parks, Recreation and Cultural Affairs (also known as the Essex County Park System). The remaining land within the Township consists mainly of residential uses with a small portion zoned for commercial and light industrial use. The Township zoning designations are shown on **Map 10**.

The Census Bureau population count for Verona Township was 13,332 in 2010 (extrapolated to 13,461 in 2013). In year 2000, the population was 13,533; therefore the Township population has remained approximately the same for the last 13 years.

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

- Verona Township is considered an urbanized municipality.
- The municipality is not located within the Highlands Region.

Existing Infrastructure

The existing wastewater collection and conveyance infrastructure within this municipality consists of the following:

- Collection System & Pumping Stations – Verona Township is generally developed throughout its borders with the exception of minor perimeter areas and conservation lands. The collection system and associated trunk sewers convey flow from these populated areas to the Verona Township STP. The collection system extends beyond the municipal borders to also service portions of Cedar Grove, North Caldwell, Caldwell, Essex Fells, West Orange and Montclair. There are no existing pumping stations located within the Township (there is one pumping station associated with the Verona Township STP, however it is located in the Borough of Caldwell).
- Collection System (outside service providers) – a small portion of the Township's wastewater along the southern border is conveyed to the Joint Meeting of Essex & Union County (JMEUC; NJ0024741). Two additional small areas on the western border are conveyed to the Caldwell STP (NJ0020427).

The existing major wastewater treatment facilities located within the municipality include:

- Verona Township STP – this is the wastewater treatment facility serving a majority of the Township and small portions of Cedar Grove, North Caldwell, Caldwell, Essex Fells, West Orange and Montclair. The plant outfall is located on the Peckman River.

There are no additional minor facilities in Verona Township regulated through NJDEP that have individual New Jersey Pollutant Discharge Elimination System (NJPDES) discharge permits. The existing treatment facilities are illustrated on **Map 1**.

Environmental and Other Land Features

The countywide Environmental Features are shown on **Maps 4** through **9**.

The northwestern portion of the Township includes a portion of the Hilltop Reservation and the southeast area of the Township includes a portion of the Eagle Rock Reservation. The Peckman River and Verona Park roughly bisect the Township in the north/south direction.

Delineation of Service Areas and Planning Integration

Sewer Service Areas

The existing areas served and future SSAs within Verona Township are shown on **Maps 1** and **11**, respectively. Wastewater treatment within the Township is predominantly provided by the Verona Township STP (WWTP). There is one additional service area that is served by JMEUC and two areas that are served by the Caldwell STP. The facilities providing treatment to this service area have associated facilities tables in **Appendix C.**

General Service Area

General Service Areas (GSAs) consist of those areas with discharges to groundwater of less than 2,000 gallons per day (i.e. individual subsurface sewage disposal systems a/k/a residential septic systems) that are neither designated for sewer service nor as non-discharge areas. A general service area for individual subsurface sewage disposal systems has not been established in Verona.

Non-discharge areas are areas where additional wastewater generation and/ or discharge are prohibited. In Verona Township, non-discharge areas include the Hilltop Reservation and Eagle Rock Reservation, both Essex County parks with the exception of existing and proposed restroom and snack stand facilities.

Coordination and Compliance with the New Jersey Highlands Regional Master Plan

Verona Township is not located within the New Jersey Highlands Region.

Significant Actions

The Verona Township STP at 10 Commerce Court currently discharges into the Peckman River and is regulated under NJPDES Permit No. NJ0024490. In general, the existing Verona Township STP will continue to operate and treat flow tributary to the existing collection system.

An area of North Caldwell that was formerly home to the Essex County Penitentiary is tributary to the Verona STP. The Four Seasons at North Caldwell, an active adult community, is currently under construction on one of the parcels. In August 2013, an ordinance was passed by the Borough of North Caldwell approving the Amended Redevelopment Plan for the remaining 36 acres of the penitentiary site. The Amended Redevelopment Plan established two new zoning districts, the single family R-8 District (minimum 8,640 sq. ft.) and the Affordable Housing District. In total, the ordinance approved 62 single family homes and 50 affordable housing units (apartments).

Future Wastewater Demand and Facilities

It is noted that all municipalities within Essex County are considered urbanized for the purposes of this WMP. As such, it is appropriate to evaluate future growth in the SSAs using governmental and/or institutional projected demographic data rather than evaluate remaining undeveloped lands. For Verona Township, in order to evaluate capacity and future sanitary flow rates, a build-out projection was made using 20-year projections for both residential population growth and labor force growth. Data for these projections was obtained from the North Jersey Transportation Planning Authority (NJTPA) municipal forecasts approved on September 10, 2013 and is provided in **Appendix M**. Based on the calculated 20-year population figures, estimated residential and non-residential wastewater flows were calculated based on the following:

Residential build-out flows are based on the Water Quality Management Plan rules published in NJAC 7:15. These rules direct urban based build-outs to use **75 gpd/capita** for single family home residential sewage. Build-out flows for 3-bedroom apartments were based on NJAC 7:14A-23.3 at **300 gpd/apartment**; build-out flows for 2-bedroom retirement housing was also based on NJAC 7:14A-23.3 at **170 gpd/residence**.

Non-residential build-out flows were based on the following:

- 0.1 gpd/SF per NJAC 7:14A-23.1; and
- Office space is 250 SF per employee per the “Building Owners and Managers Association Guidelines“ (BOMA) Standard Method for Measuring Office Floor Area

Therefore, non-residential sewage is estimated at:

(0.1 gpd/SF)*(250 SF/employee) = **25 gpd/employee**

Sewer Service Area Wastewater Capacity Analysis

Table 1 presents the results of the Build-out Analysis for Verona Township. The table identifies the current NJDPES permit flow of the Verona Township STP at 3.0 MGD. The most current 12 months of existing STP monthly average 30-day flow is 1.401 MGD, based upon flow data from December

2012 through November 2013 (from NJDEP). There are no Treatment Works Approvals (TWAs) approved by NJDEP for unconnected projects within Verona Township, so the anticipated future flow within Verona is based upon the 20-year projection described above. There are additional sewer service areas outside of the Verona Township boundaries in Cedar Grove, North Caldwell, West Orange, Montclair, Essex Fells and Caldwell. In these areas, an analysis was performed to identify vacant lots and their development potential. Planned development was taken into account and zoning was used to determine the number of residences on land where there were no published plans for development. Residential build-out flows for these areas were based on the above criteria and added to the total build-out flows for the Verona STP.

Verona's residential population is anticipated to increase by 907 people in the next 20 years. At 75 gpd/capita, this equates to 0.068 MGD. Verona's employment population is anticipated to increase by 458 in the next 20 years. At 25 gpd/employee, this equates to 0.011 MGD.

Verona SSA in West Orange

There are 8 vacant lots with development potential for single family homes in West Orange that are located in the Verona SSA. At 2.70 people/household (per the 2010 Census) and 75 gpd/capita, future residential wastewater flows are estimated at 1,650 gpd.

Verona SSA in Cedar Grove

The Hilltop Redevelopment Plan along Fairview Avenue in Cedar Grove was approved for 47 single family residences. There is additional vacant land in Cedar Grove zoned R-18 (18,000 sq. ft. minimum lot size) that could potentially contain 208 single family homes. At 2.57 people/household (per the 2010 Census) and 75 gpd/capita, future residential wastewater flows are estimated at 49,050 gpd.

Verona SSA in North Caldwell

Redevelopment is planned at the site of the former Essex County Penitentiary. The Four Seasons at North Caldwell active adult community is currently under construction on roughly 17 acres of the former penitentiary site. The community will contain 108 two-bedroom single floor residences. Approximately 80 percent of the units are occupied, leaving 20 percent for future development. Using 170 gpd/residence per NJAC 7:14A-23.3, future residential wastewater flows from this development are estimated at 3,672 gpd.

In August 2013, an ordinance was passed by the Borough of North Caldwell approving the Amended Redevelopment Plan for the remaining 36 acres of the penitentiary site. The Amended Redevelopment Plan established two new zoning districts, the single family R-8 District (minimum 8,640 sq. ft.) and the Affordable Housing District. In total, the ordinance approved 62 single family homes and 50 affordable housing units (apartments). At 2.96 people/household (per the 2010 Census) and 75 gpd/capita, future residential wastewater flows are estimated at 13,764 gpd for the

single family homes. Assuming 3 bedroom apartments (worst case scenario), at 300 gpd/apartment per NJAC 7:14A-23.3, the affordable housing build-out flows were estimated at 15,000 gpd.

Verona SSA in Other Municipalities

Verona also provides sewer service to a portion of Essex Fells, Caldwell and Montclair. All areas in these municipalities appear to be fully built-out and there is no additional wastewater flow projected from these areas.

The total projected build-out flow (from new projected development) in the Verona SSA is summarized as follows:

Verona:	79,475 gpd
West Orange:	1,650 gpd
Cedar Grove:	49,050 gpd
North Caldwell:	32,436 gpd
Total:	162,611 gpd or 0.163 MGD (as noted in **Table 1**)

The buildout analysis shows the 20-year buildout flow (the total of the existing Verona WWTP flows and projected build-out flow) is 1.564 MGD. When compared to the current NJPDES permit capacity of the Verona STP of 3.0 MGD, the analysis demonstrates a capacity surplus of 1.436 MGD.

Table 1: Verona Township Build-out Table (SSAs)

Wastewater Treatment Facility			Build-out Flow			WWTP		
Major Public Wastewater Treatment Facility	**Capacity Allocation/ Permitted Capacity (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)**	**Total Projected Build-out Flow (mgd)**	**Total Projected 2033 Flow (mgd)**	**Remaining Capacity (mgd)**
Verona STP	3.0	1.401[1]	0	0.151	0.011	0.163	1.564	1.436

[1] This is the current 12 month annual average for 12/1/12 to 11/30/13.

Note: A separate portion of the build-out flow is tributary to the Caldwell STP and JMEUC and is included in separate chapters. The flows in the above table are all tributary to the Verona STP.

Based on **Table 1**, Verona Township has sufficient wastewater treatment capacity to match the expected build-out potential within the Township.

General Service Area Wastewater Capacity Analysis

Various minimum lot areas are required for a single dwelling unit, or other development within Verona Township dependent on zoning. N.J.S.A. 58: 11-25 of the Realty Improvement Sewerage and Facilities Act grants the approval for construction and installation of an Individual Subsurface Sewage Disposal System (ISSDS) by the local Administrative Authority. As provided under N.J.A.C. 7:9A the standards for the proper location, design, and minimum separation distance between the various components of the system and the other features would render the local approval for the construction of an ISSDS on smaller lots exceedingly difficult. As the use of ISSDS as an onsite treatment alternative may not be permissible on the minimum lot size parcels within Verona Township, the Department has recognized the stated intent of Verona Township is to provide sewer service within the entire designated planning area to the maximum extent allowable under the conformance of federal waiver or mapping revision process. Consequently, all proposed subdivisions resulting in six (6) or more dwelling units within those areas of Verona Township that are outside of the proposed sewer service area shall require an amendment. As part of the amendment review process, the analysis to evaluate the groundwater impacts and septic systems density must be conducted. As a result, the Nitrate Dilution Model analysis was not required as part of the review of the Essex County WMP.

Water Supply Demand

Pursuant to N.J.A.C. 7:15-5.25(f), a water supply analysis is required to demonstrate that the water supply needs associated with existing and future development do not conflict with the current New Jersey State Water Supply Plan. The current New Jersey State Water Supply Plan was adopted in August 1996.

Verona's water supply comes from groundwater wells owned by the Township of Verona and treated surface water purchased from the Passaic Valley Water Commission (PVWC; NJ1605002) for a total monthly limit of 99.600 MGM (34.600 MGM allocation + 65.000 MGM contract limit). Verona has a firm capacity of 2.396 MGD. Firm capacity is defined as "adequate pumping equipment and/or treatment capacity (excluding coagulation, flocculation, and sedimentation) to meet peak daily demand when the largest pumping station or treatment unit is out of service." The existing total peak daily demand (including committed peak) is 2.352 MGD, where committed peak is calculated as follows:

[(Projected Residential average daily demand) + (Projected Non-residential average daily demand)] * 3.0

where:

Projected Residential Average Daily Demand (ADD) was calculated according to the State of NJ Division of Consumer Affairs (DCA's) Residential Site Improvement Standards (RSIS), N.J.A.C. 5:21-5.2(d) at **100 gpd/capita**.

Non-residential ADD was based on N.J.A.C. 7:10-12.6(b) for office space, Table 1:

- 0.125 gpd/SF; and
- Office space is 250 SF per employee per the "Building Owners and Managers Association Guidelines" (BOMA) Standard Method for Measuring Office Floor Area

Therefore, non-residential ADD is estimated at:

(0.125 gpd/SF)*(250 SF/employee) = **31.25 gpd/employee**

Verona's residential population is anticipated to increase by 907 people in the next 20 years. At 100 gpd/capita, this equates to 0.091 MGD. Verona's employment population is anticipated to increase by 458 in the next 20 years. At 31.25 gpd/employee, this equates to 0.014 MGD. Therefore, the total projected build-out ADD is estimated at 0.105 MGD.

For the purposes of water supply projections, the NJDEP uses a greater per capita flow than RSIS. These different per capita flow rates account for the difference in sewer and water projections within this chapter.

According to the NJDEP Public Water System Deficit/Surplus Analysis (updated October 2012) Verona currently has a water supply surplus of 29.995 MGM and a firm capacity surplus of 0.044 MGD. In order to update the water supply and firm capacity surplus/deficit for future demands, multipliers were applied to the projected build-out ADD in accordance with the NJDEP Firm Capacity and Water Allocation Analysis as follows:

Firm Capacity Surplus/Deficit Calculation:

Assuming the future development as "committed peak," a peaking factor of 3.0 was applied to the projected build-out ADD. **Table 2** shows Peak Demand due to Future Development at 0.315 MGD. [0.105 MGD * 3.0 = 0.315 MGD]

The projected peak daily demand (0.315 MGD) was added to the existing peak daily demand (2.352 MGD)and then subtracted from the existing firm capacity (2.396 MGD) to calculate the firm capacity surplus/deficit (0.271 MGD deficit).

Water Supply Surplus/Deficit Calculation:

Assuming the future development as "committed peak," a peaking factor of 1.5 was applied to the projected build-out ADD and then multiplied by 31 days. **Table 2** shows Peak Demand due to Future Development at 4.883 MGD. [0.105 MGD * 1.5 * 31 = 4.883 MGM]

The projected peak monthly demand (4.883 MGM) was added to the existing peak monthly demand (69.605 MGM) and then subtracted from the existing allocation/contract amount (99.600 MGM) to calculate the water supply surplus/deficit (25.112 MGM surplus).

Additional water demands due to future development will create a firm capacity deficit although a water supply surplus will still exist, as shown in **Table 2** below. Refer to **Appendix N** for the Verona Water Department NJDEP Public Water System Deficit/Surplus Analysis.

Table 2 – Verona Water Department Water Supply Demand by PWSID

PWSID	Purveyor	Allocation (MGM)	Contract Limit (MGM)	Total Limit (MGM)	Firm Capacity (MGD)	Peak Daily Demand (MGD)	Total Peak Monthly Demand (MGM)	Firm Capacity Deficit/Surplus (MGD)	Water Supply Deficit/Surplus (MGM)	Year
0720001	Verona Water Dept.	34.600	65.000	99.600	2.396	2.352[1]	69.605[1]	+0.044	+29.995	2012
Peak Demand Due to Future Development (MGD)						0.315	4.883			
						2.667	74.488	-0.271	+25.112	2033

[1]Peak Daily Demand and Total Peak Monthly Demand have been obtained from the NJDEP Division of Water Supply and Geoscience website (refer to appendix). For conservative purposes, the committed peak flows have been included in the existing condition. It may be possible that a portion of this committed peak should be included in the future development values in this table.

Model Ordinances

Table 3 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.

Table 3 – Summary of Ordinance Adoption

Ordinance	**Date Adopted**	**Complies with NJAC 7:15**	**Comments and More Protective Standards**
Stormwater Management (Ground Water Recharge Maintenance)	5/16/2007	YES	NO
Riparian Zone Protection	NO	NO	NO
Steep Slope Protection	NO	NO	NO
Septic System Maintenance	NO	NO	NO
Dry Conveyances in Sewer Service Area	NO	NO	NO
Septic Connection in Sewer Service Area	NO	NO	NO

Township of West Caldwell

Introduction

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

The Township of West Caldwell was incorporated in 1904, from portions of what is now Fairfield Township. West Caldwell Township is located in the northwestern portion of Essex County and encompasses approximately 5.1 square miles. The Township is zoned approximately half residential; the remaining half of the Township contains open space, conservation, commercial and light industrial lands. The Township zoning designations are shown on **Map 10**.

The Census Bureau population count for West Caldwell Township was 10,760 in 2010 (extrapolated to 10,884 in 2013). In year 2000, the population was 11,233; therefore the Township population has decreased by approximately 3% over the last 13 years.

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

- Township of West Caldwell is considered an urbanized municipality.
- The municipality is not located within the Highlands Region.

Existing Infrastructure

The existing wastewater collection and conveyance infrastructure within this municipality consists of the following:

- Collection System – the Township of West Caldwell is generally developed throughout its borders with the exception of conservation lands and environmentally constrained lands. The Township's wastewater collection system includes over 44 miles of gravity sewer and force main. The wastewater collection system conveys sewage to the Caldwell Sewage Treatment Plant (STP; NJ0020427) located in West Caldwell Township and the Fairfield collection system (in the northern portion of the Township), which is tributary to the Two Bridges Sewerage Authority (TBSA; NJ0029386).
- Pumping Stations – The wastewater collection system also includes one (1) pump station within the West Caldwell Township borders.

There are no existing major wastewater treatment facilities located within the municipality. Further, there are no minor facilities that discharge to surface water (DSW) or groundwater (DGW).

Environmental and Other Land Features

The countywide Environmental Features are shown on **Maps 4** through **9**.

The western portion of the Township contains various environmental and land features including natural heritage priority sites, state threatened and endangered species, open space, riparian buffers, wetlands, flood zones and environmentally sensitive areas along the Passaic River and its tributaries.

Delineation of Service Areas and Planning Integration

Sewer Service Areas

The existing areas served and future SSAs within Township of West Caldwell are shown on **Maps 1** and **11**, respectively. Wastewater in the Township is conveyed to the Caldwell STP with a small portion in the north conveyed to the Fairfield Township collection system with ultimate treatment by Two Bridges Sewer Authority (TBSA). The facilities providing treatment to this service area have associated facilities tables in **Appendix C**.

General Service Area

General Service Areas (GSAs) consist of those areas with discharges to groundwater of less than 2,000 gallons per day (i.e. individual subsurface sewage disposal systems a/k/a residential septic systems) that are neither designated for sewer service nor as non-discharge areas. A general service area for individual subsurface sewage disposal systems has not been established in West Caldwell.

Non-discharge areas are areas where additional wastewater generation and/ or discharge are prohibited. In the Township of West Caldwell, non-discharge areas include the open space and wetlands along the Passaic River in the western portion of the Township, as delineated on **Maps 1** and **11**.

Coordination and Compliance with the New Jersey Highlands Regional Master Plan

The Township of West Caldwell is not located within the New Jersey Highlands Region.

Significant Actions

Two sewer service areas in North Caldwell were edited to show the correct existing boundaries. That is, there were no changes to the actual sewer service provided to each area, but the map boundaries were corrected to reflect actual conditions. Both areas are located along the northern border of North Caldwell and are currently shown being tributary to the Caldwell STP. The areas are as follows:

- The area bounded by Grandview Ave. on the south and Fairfield Road/municipal boundary on the north is actually served by Two Bridges Sewer Authority (TBSA). The revised SSA is reflected on **Map 11** and is outlined in red on **Figure 1**, below.
- The area north of Birchwood Rd. and bounded by Grandview Ave. on the west is actually served by the Passaic Valley Sewerage Authority (PVSC). The revised SSA is reflected on **Map 11** and is outlined in red on **Figure 1**, below.

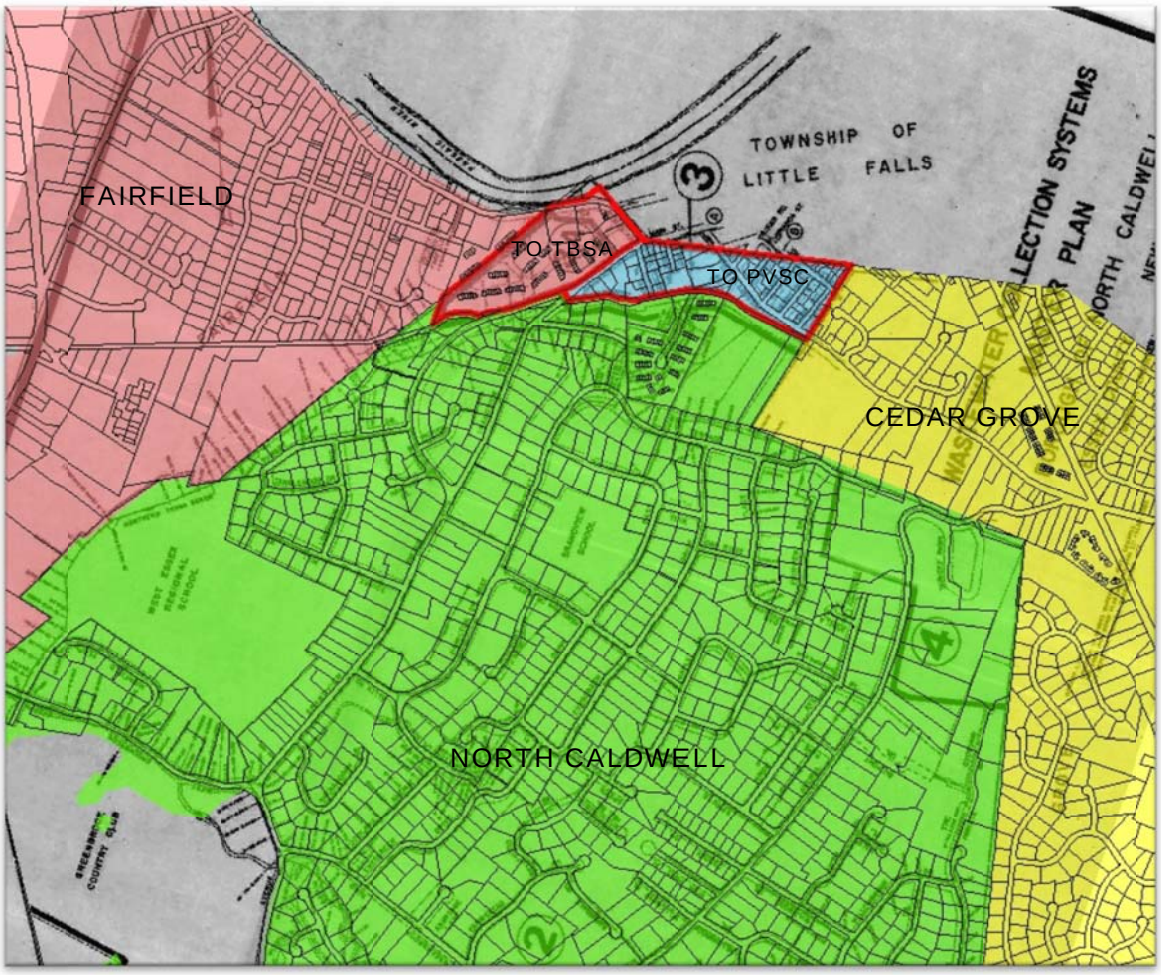


Figure 1: Corrections to Existing Sewer Service Areas in North Caldwell

One additional sewer service area boundary in Fairfield was edited to show the correct existing boundaries. Again, there were no changes to the actual sewer service provided to the area, but the map boundaries were corrected to reflect actual conditions. The area was previously shown tributary to TBSA but is actually tributary to the Caldwell STP. The area is described as follows:

- The area bounded by the Green Brook Country Club on the east. The revised SSA includes the remainder of residences on Schindler Way. The revised SSA is reflected on **Map 11** and is outlined in red on **Figure 2** below.

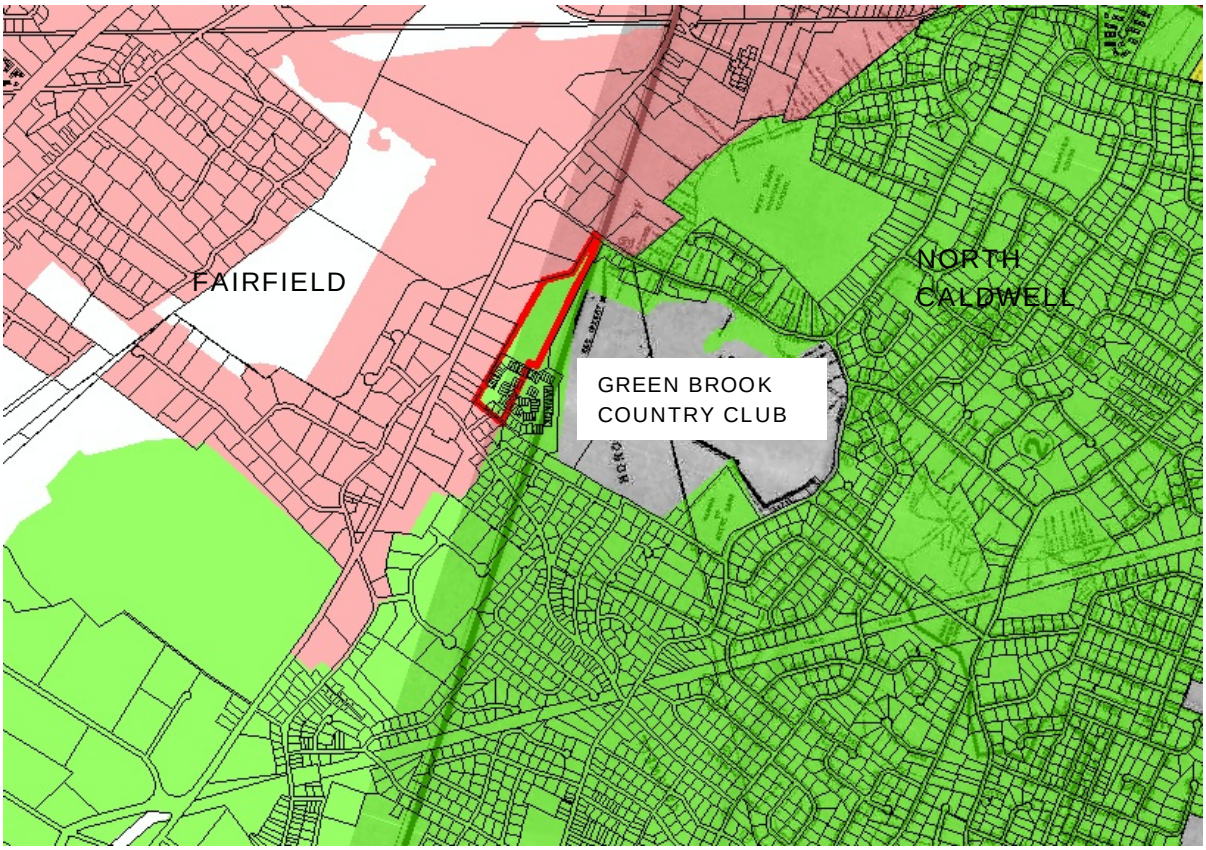


Figure 2: Corrections to Existing Sewer Service Area in Fairfield

Future Wastewater Demand and Facilities

It is noted that all municipalities within Essex County are considered urbanized for the purposes of this WMP. As such, it is appropriate to evaluate future growth in the SSAs using governmental and/or institutional projected demographic data rather than evaluate remaining undeveloped lands. For the Township of West Caldwell, in order to evaluate capacity and future sanitary flow rates, a build-out projection was made using 20-year projections for both residential population growth and labor force growth. Data for these projections was obtained from the North Jersey Transportation Planning Authority (NJTPA) municipal forecasts approved on September 10, 2013 and is provided in **Appendix M**. Based on the calculated 20-year population figures, estimated residential and non-residential wastewater flows were calculated based on the following:

Residential build-out flows are based on the Water Quality Management Plan rules published in NJAC 7:15. These rules direct urban based build-outs to use **75 gpd/capita** for residential sewage. Build-out flows for 2-bedroom townhomes were based on NJAC 7:14A-23.3 at **225 gpd/residence**.

Non-residential build-out flows were based on the following:

- 0.1 gpd/SF per NJAC 7:14A-23.1; and

- Office space is 250 SF per employee per the "Building Owners and Managers Association Guidelines" (BOMA) Standard Method for Measuring Office Floor Area

Therefore, non-residential sewage is estimated at:

(0.1 gpd/SF)*(250 SF/employee) = **25 gpd/employee**

Sewer Service Area Wastewater Capacity Analysis

Table 1 presents the results of the Build-out Analysis for Township of West Caldwell. The table identifies the current NJDPES permit flow of the Caldwell STP at 4.6 MGD. The most current 12 months of existing STP monthly average 30-day flow is 4.088 MGD, based upon flow data from December 2012 through November 2013 (from NJDEP). There are no Treatment Works Approvals (TWAs) approved by NJDEP for unconnected projects within West Caldwell, so the anticipated future flow within the Township is based upon the 20-year projection described above. There are additional sewer service areas outside of the West Caldwell Township boundaries in the Borough of North Caldwell, Borough of Caldwell, Borough of Roseland, Borough of Essex Fells, Township of Fairfield, Township of Verona and Township of Livingston. In these areas, the 20-year population projections were used in addition to an analysis to identify vacant lots and their development potential. Planned development was taken into account and zoning was used to determine the number of residences on land where there were no published plans for development. Residential build-out flows for these areas were based on the above criteria and added to the total build-out flows for the Caldwell STP.

West Caldwell

West Caldwell's residential population is anticipated to increase by 867 people in the next 20 years. At 75 gpd/capita, this equates to 0.065 MGD. West Caldwell's employment population is anticipated to increase by 586 in the next 20 years. At 25 gpd/employee, this equates to 0.015 MGD. A portion of West Caldwell is tributary to TBSA. Within the TBSA service area (in West Caldwell), a review of vacant lots showed that the Heritage at West Caldwell townhomes are currently under construction on Clinton Road. The community will contain 38 two-bedroom residences. Using 225 gpd/residence per NJAC 7:14A-23.3, future residential wastewater flows from this development are estimated at 8,550 gpd. Since these townhomes are tributary to TBSA, this flow was subtracted from West Caldwell's anticipated growth (from the 20 year population projections) to yield an anticipated 0.056 MGD from residential development. Including employment wastewater flows (0.015 MGD), the total projected build-out flow for West Caldwell (tributary to the Caldwell STP) is 0.071 MGD, as noted in **Table 1**.

North Caldwell

North Caldwell is predominantly tributary to the Caldwell STP; however there is a portion that is tributary to the Verona STP. The area in North Caldwell that is tributary to the Verona STP consists of redevelopment lands that will house an active adult community, single family homes and an affordable housing project. The redevelopment will produce estimated wastewater flows of 32,436

gpd. Based on the number of single family homes and apartments, and using 2.96 people/household (per the 2010 Census), the total population growth tributary to Verona is estimated at 375 people.

According to the NJTPA population projections, the Borough's residential population is anticipated to increase by 467 persons in the next 20 years. Assuming that the population increase from the redevelopment housing units is included in the NJTPA population projections, there are 92 persons projected in the Caldwell STP service area in the next 20 years. At 75 gpd/capita, this equates to 0.007 MGD. The Borough's employment population is anticipated to increase by 140 in the next 20 years. At 25 gpd/employee, this equates to 0.004 MGD. The total projected build-out flow in the Caldwell STP SSA (from new projected development) is noted in **Table 1** as 0.010 MGD.

Refer to the Verona chapter regarding total tributary build-out flows vs. the Verona STP capacity. Refer to the Borough of North Caldwell chapter regarding the detailed build-out flows from redevelopment.

Caldwell

Caldwell's residential population is anticipated to increase by 394 people in the next 20 years. At 75 gpd/capita, this equates to 0.030 MGD. Caldwell's employment population is anticipated to increase by 151 in the next 20 years. At 25 gpd/employee, this equates to 0.004 MGD. The total projected build-out flow (from new projected development) is noted in **Table 1** as 0.033 MGD.

It is noted that three areas of Caldwell along the eastern border of the Borough are tributary to the Verona STP. Based on a review of the lots, it appears that these areas are already built-out and no additional development will occur.

Roseland

Roseland's residential population is anticipated to increase by 463 people in the next 20 years. At 75 gpd/capita, this equates to 0.035 MGD. Roseland's employment population is anticipated to increase by 679 in the next 20 years. At 25 gpd/employee, this equates to 0.017 MGD. The total projected build-out flow (from new projected development) is noted in **Table 1** as 0.052 MGD.

Essex Fells

The Borough's residential population is anticipated to increase by 353 people in the next 20 years. At 75 gpd/capita, this equates to 0.026 MGD. The Borough's employment population is anticipated to increase by 147 in the next 20 years. At 25 gpd/employee, this equates to 0.004 MGD. The total projected build-out flow (from new projected development) is noted in **Table 1** as 0.030 MGD.

It is noted that an area located in the northeast section of the Borough is tributary to the Verona STP. Based on a review of the lots, it appears that these areas are already built-out and no additional development will occur.

Fairfield

The majority of the Township of Fairfield is served by TBSA. A small portion of the Township surrounding the Green Brook Country club is tributary to the Caldwell STP. Based on a review of the lots in the Caldwell STP service area, it appears that these areas are already built-out and no additional development will occur.

Verona

The majority of the Township of Verona is served by the Verona STP. Two small areas along the western border of the Township are tributary to the Caldwell STP. Based on a review of the lots in the Caldwell STP service area, it appears that these areas are already built-out and no additional development will occur.

West Orange

The majority of the Township of West Orange is served by the Joint Meeting of Essex & Union Counties (JMEUC; NJ0024741). One small area immediately south of the Essex Fells Country Club along the Roseland border is tributary to the Caldwell STP. Based on a review of the lots in the Caldwell STP service area, it appears that these areas are already built-out and no additional development will occur.

Livingston

The majority of the Township of Livingston is served by the Livingston WPCF. One area north of I-280 along the Roseland border is tributary to the Caldwell STP. Based on a review of the lots in the Caldwell STP service area, it appears that these areas are already built-out and no additional development will occur.

Summary

The total projected build-out flow tributary to the Caldwell STP is noted in **Table 1** as 0.197 MGD.

The buildout analysis shows the 20-year buildout flow (the total of the existing Caldwell STP flows and future flow) is 4.285 MGD. When compared to the current NJPDES permit capacity of the Caldwell STP of 4.6 MGD, the analysis demonstrates a capacity surplus of 0.315 MGD.

Table 1: Township of West Caldwell Build-out Table (SSAs)

Wastewater Treatment Facility			Build-out Flow				WWTP	
Major Public Wastewater Treatment Facility	**Capacity Allocation/ Permitted Capacity (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)**	**Total Projected Build-out Flow (mgd)**	**Total Projected 2033 Flow (mgd)**	**Remaining Capacity (mgd)**
Caldwell STP	4.6	4.088[1]	-	-	-	-	-	-
		West Caldwell	0	0.056	0.015	0.071	-	-
		North Caldwell	0	0.007	0.004	0.010	-	-
		Caldwell	0	0.030	0.004	0.033	-	-
		Roseland	0	0.035	0.017	0.052	-	-
		Essex Fells	0	0.026	0.004	0.030	-	-
		Fairfield	0	0	0	0	-	-
		Verona	0	0	0	0	-	-
		West Orange	0	0	0	0	-	-
		Livingston	0	0	0	0	-	-
		Total	**0**	**0.154**	**0.043**	**0.197**	**4.285**	**0.315**

[1] This is the current 12 month annual average for 12/1/12 to 11/30/13.

Note: Municipalities tributary to the Caldwell STP include Borough of Caldwell, Borough of Roseland, Borough of Essex Fells, Borough of North Caldwell, Township of West Caldwell, Township of Fairfield, Township of Verona, Township of Livingston and Township of West Orange.

General Service Area Wastewater Capacity Analysis

Various minimum lot areas are required for a single dwelling unit, or other development within Borough of West Caldwell dependent on zoning. N.J.S.A. 58: 11-25 of the Realty Improvement Sewerage and Facilities Act grants the approval for construction and installation of an Individual Subsurface Sewage Disposal System (ISSDS) by the local Administrative Authority. As provided under N.J.A.C. 7:9A the standards for the proper location, design, and minimum separation distance between the various components of the system and the other features would render the local approval for the construction of an ISSDS on smaller lots exceedingly difficult. As the use of ISSDS as an onsite treatment alternative may not be permissible on the minimum lot size parcels within the Township of West Caldwell, the Department has recognized the stated intent of the Township of West Caldwell is to provide sewer service within the entire designated planning area to the maximum extent allowable under the conformance of federal waiver or mapping revision process. Consequently, all proposed subdivisions resulting in six (6) or more dwelling units within those areas of the Township of West Caldwell that are outside of the proposed sewer service area shall require an amendment. As part of the amendment review process, the analysis to evaluate the groundwater impacts and septic systems density must be conducted. As a result, the Nitrate Dilution Model analysis was not required as part of the review of the Essex County WMP.

Water Supply Demand

Pursuant to N.J.A.C. 7:15-5.25(f), a water supply analysis is required to demonstrate that the water supply needs associated with existing and future development do not conflict with the current New Jersey State Water Supply Plan. The current New Jersey State Water Supply Plan was adopted in August 1996.

West Caldwell purchases water from the Passaic Valley Water Commission (PVWC; NJ1605002). for a total monthly limit (contract amount) of 71.300 MGM. West Caldwell has a firm capacity of 2.700 MGD. Firm capacity is defined as “adequate pumping equipment and/or treatment capacity (excluding coagulation, flocculation, and sedimentation) to meet peak daily demand when the largest pumping station or treatment unit is out of service.” The existing total peak daily demand (including committed peak) is 1.916 MGD, where committed peak is calculated as follows:

[(Projected Residential average daily demand) + (Projected Non-residential average daily demand)] * 3.0

where:

Projected Residential Average Daily Demand (ADD) was calculated according to the State of NJ Division of Consumer Affairs (DCA’s) Residential Site Improvement Standards (RSIS), N.J.A.C. 5:21-5.2(d) at **100 gpd/capita**.

Non-residential ADD was based on N.J.A.C. 7:10-12.6(b) for office space, Table 1:

- 0.125 gpd/SF; and

- Office space is 250 SF per employee per the "Building Owners and Managers Association Guidelines" (BOMA) Standard Method for Measuring Office Floor Area

Therefore, non-residential ADD is estimated at:

(0.125 gpd/SF)*(250 SF/employee) = **31.25 gpd/employee**

West Caldwell's residential population is anticipated to increase by 867 people in the next 20 years. At 100 gpd/capita, this equates to 0.087 MGD. West Caldwell's employment population is anticipated to increase by 586 in the next 20 years. At 31.25 gpd/employee, this equates to 0.018 MGD. Therefore, the total projected build-out ADD is estimated at 0.105 MGD.

For the purposes of water supply projections, the NJDEP uses a greater per capita flow than RSIS. These different per capita flow rates account for the difference in sewer and water projections within this chapter.

According to the NJDEP Public Water System Deficit/Surplus Analysis (updated January 2014) West Caldwell currently has a water supply surplus of 14.789 MGM and a firm capacity surplus of 0.784 MGD. In order to update the water supply and firm capacity surplus/deficit for future demands, multipliers were applied to the projected build-out ADD in accordance with the NJDEP Firm Capacity and Water Allocation Analysis as follows:

Firm Capacity Surplus/Deficit Calculation:

Assuming the future development as "committed peak," a peaking factor of 3.0 was applied to the projected build-out ADD. **Table 2** shows Peak Demand due to Future Development at 0.315 MGD. [0.105 MGD * 3.0 = 0.315 MGD]

The projected peak daily demand (0.315 MGD) was added to the existing peak daily demand (1.916 MGD)and then subtracted from the existing firm capacity (2.700 MGD) to calculate the firm capacity surplus/deficit (0.469 MGD surplus).

Water Supply Surplus/Deficit Calculation:

Assuming the future development as "committed peak," a peaking factor of 1.5 was applied to the projected build-out ADD and then multiplied by 31 days. **Table 2** shows Peak Demand due to Future Development at 4.883 MGD. [0.105 MGD * 1.5 * 31 = 4.883 MGM]

The projected peak monthly demand (4.883 MGM) was added to the existing peak monthly demand (56.511 MGM) and then subtracted from the existing contract limit (71.300 MGM) to calculate the water supply surplus/deficit (9.906 MGM surplus).

Therefore, based on the information in **Table 2** below, there is no information indicating that there would be a shortage of water supply. Further, there are no significant water supply issues identified in the current State Water Supply Plan for the planning areas impacting Passaic County." Refer to **Appendix N** for the West Caldwell NJDEP Public Water System Deficit/Surplus Analysis.

Table 2 – Township of West Caldwell Water Supply Demand by PWSID

PWSID	Purveyor	Contract Limit (MGM)	Firm Capacity (MGD)	Peak Daily Demand (MGD)	Total Peak Monthly Demand (MGM)	Firm Capacity Deficit/Surplus (MGD)	Water Supply Deficit/Surplus (MGM)	Year
0721001	West Caldwell Township Water Dept.	71.300	2.700	1.916[1]	56.511[1]	0.784	14.789	2014
Peak Demand Due to Future Development (MGD)				0.315	4.883			
				2.231	61.394	0.469	9.906	2033

[1]Peak Daily Demand and Total Peak Monthly Demand have been obtained from the NJDEP Division of Water Supply and Geoscience website (refer to appendix). For conservative purposes, the committed peak flows have been included in the existing condition. It may be possible that a portion of this committed peak should be included in the future development values in this table.

Model Ordinances

Table 3 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.

Table 3 – Summary of Ordinance Adoption

Ordinance	**Date Adopted**	**Complies with NJAC 7:15**	**Comments and More Protective Standards**
Stormwater Management (Ground Water Recharge Maintenance)	2004-2009	YES	NO
Riparian Zone Protection	NO	NO	NO
Steep Slope Protection	NO	NO	NO
Septic System Maintenance	NO	NO	NO
Dry Conveyances in Sewer Service Area	NO	NO	NO
Septic Connection in Sewer Service Area	NO	NO	NO

Township of West Orange

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

The Township of West Orange is located within the Joint Meeting Essex & Union Counties wastewater service area (NJ0024741) and, thus, is addressed in the Joint Meeting Essex & Union Counties Wastewater Management Plan, which is currently going through the adoption process. A small portion of the Township is also served by the Township of Verona (NJ0024490), which is addressed in the Wastewater Management Plan for Essex County.

Appendix A – Habitat Suitability Determinations/Wetlands Letters of Interpretation

Not applicable

Appendix B – USEPA Section 201 Map Revisions or Grant Waivers

Not applicable

Appendix C – Wastewater Facilities Tables

The wastewater facility tables for all sanitary and/or process wastewater discharge to surface water facilities and those sanitary/ and/or process wastewater discharge to groundwater facilities discharging greater than 2000 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.

Domestic Wastewater Facilities With Sewer Service Areas in Multiple Municipalities – These facilities are listed in Tables 1 through 7.

Domestic Wastewater Facilities With Sewer Service Area in One Municipality – These facilities are listed in Table 8.

On-Site Domestic Treatment Facilities– These facilities are listed in Tables 9 through 11.

Industrial Wastewater Facilities – These facilities are listed in Table 12.

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

Table C-1 DOMESTIC TREATMENT FACILITIES SERVING MULTIPLE MUNICIPALITIES		
1. Existing or proposed facility:	Caldwell Wastewater Treatment Plant	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ0020427	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW	
4. Receiving water or aquifer:	Passaic River (via unnamed tributary)	
5. Classification of receiving water or aquifer:	FW2-NT	
6. Owner of facility:		
7. Operator of facility:		
8. Co-Permittee of facility *(where applicable)*:		
9. Location of facility:	West Caldwell Township, NJ	
a. Municipality & County	West Caldwell Township, Essex County	
b. Street address	End of Pine Tree Place, West Caldwell, NJ 07006	
c. Block(s) and Lot(s)	Block 3308, Lot 1	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude- 74° 18' 47.9" b. Latitude- 40° 50' 20.4"	
	c. State Plane Coordinates- (543775.30406, 730595.11083)	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW): *Data from 2010	4.5 MGD	
*12. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2013) Population	20-Year Future (Year 2033)
Municipality: West Caldwell	10,866	11,631
Municipality: North Caldwell	6,419	6,511
Municipality: Caldwell	7,753	8,147
Municipality: Roseland	5,887	6,350
Municipality: Essex Fells	1,894	2,247
Municipality: Fairfield	437	437
Municipality: Verona	0	0
Municipality: West Orange	21	21
Municipality: Livingston	15	15
Total	**33,293**	**35,360**
*13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW	Current (Year 2013) Flow (in MGD)	20-Year Future (Year 2033) (in MGD)
Municipality: West Caldwell		
Residential flow	1.206	1.262
Commercial flow	0.128	0.143
Industrial flow	0	0
Infiltration/Inflow	0	0
Municipal Total	**1.334**	**1.405**

Municipality: North Caldwell		
Residential flow	0.788	0.795
Commercial flow	0	0.004
Industrial flow	0	0
Infiltration/Inflow	0	0
Municipal Total	**0.788**	**0.799**
Municipality: Caldwell		
Residential flow	0.800	0.830
Commercial flow	0.152	.0156
Industrial flow	0	0
Infiltration/Inflow	0	0
Municipal Total	**0.952**	**0.986**
Municipality: Roseland		
Residential flow	0.506	0.541
Commercial flow	0.217	0.234
Industrial flow	0	0
Infiltration/Inflow	0	0
Municipal Total	**0.723**	**0.775**
Municipality: Essex Fells		
Residential flow	0.233	0.259
Commercial flow	0	0.004
Industrial flow	0	0
Infiltration/Inflow	0	0
Municipal Total	**0.233**	**0.263**
Municipality: Fairfield		
Residential flow	0.037	0.037
Commercial flow	0	0
Industrial flow	0	0
Infiltration/Inflow	0	0
Municipal Total	**0.037**	**0.037**
Municipality: Verona		
Residential flow	0	0
Commercial flow	0.006	0.006
Industrial flow	0	0
Infiltration/Inflow	0	0
Municipal Total	**0.006**	**0.006**
Municipality: Livingston		
Residential flow	0.001	0.001
Commercial flow	0.012	0.012
Industrial flow	0	0
Infiltration/Inflow	0	0
Municipal Total	**0.013**	**0.013**
Municipality: West Orange		
Residential flow	0.002	0.002
Commercial flow	0	0
Industrial flow	0	0

Infiltration/Inflow	0	0
Municipal Total	**0.002**	**0.002**
Facility Total	**4.088**	**4.285**

Table C-2 DOMESTIC TREATMENT FACILITIES SERVING MULTIPLE MUNICIPALITIES		
1. Existing or proposed facility:	Livingston Twp. Water Pollution Control Facility	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ0024511	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW	
4. Receiving water or aquifer:	Passaic River	
5. Classification of receiving water or aquifer:	FW2-NT (C2)	
6. Owner of facility:	Township of Livingston	
7. Operator of facility:		
8. Co-Permittee of facility *(where applicable)*:	n/a	
9. Location of facility:	81 Naylon Avenue, Livingston, NJ 07039	
a. Municipality & County	Livingston Township, Essex County	
b. Street address	81 Naylon Avenue, Livingston, NJ 07039	
c. Block(s) and Lot(s)	Block 100 and Lot 52	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude- 74°20'28" b. Latitude- 40°48'45"	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW): *Data from 2010	4.6 MGD	
*12. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2013) Population	20-Year Future (Year 2033)
Municipality: Livingston Township	29,705	32,129
Municipality: Millburn Township	9	9
Total	29,714	32,138
*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 (Year 2013) Flow (in MGD)	20-Year Future (Year 2033) (in MGD)
Municipality: Livingston Township		
Residential flow	2.305	2.488
Commercial flow	0.562	0.599
Industrial flow	0	0
Infiltration/Inflow	0	0
Municipal Total	**2.867**	**3.087**
Municipality: Millburn Township		
Residential flow	0.001	0.001
Commercial flow	0	0
Industrial flow	0	0
Infiltration/Inflow	0	0
Municipal Total	**0.001**	**0.001**
Facility Total	**2.868**	**3.088**

**Note: Residential and commercial flows based on water account classification and billed volume for 2012.*

Table C-3 DOMESTIC TREATMENT FACILITIES SERVING MULTIPLE MUNICIPALITIES		
1. Existing or proposed facility:	Verona Township STP	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ0024490	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW	
4. Receiving water or aquifer:	Peckman River	
5. Classification of receiving water or aquifer:	FW2-NT	
6. Owner of facility:	Township of Verona	
7. Operator of facility:		
8. Co-Permittee of facility *(where applicable)*:	n/a	
9. Location of facility:	Verona, NJ	
a. Municipality & County	Verona Township, Essex County	
b. Street address	10 Commerce Court Verona, NJ 07044	
c. Block(s) and Lot(s)	Block 62 Lot 1	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude- 74° 14' 09.9" b. Latitude- 40° 50' 36.2"	
	c. State Plane Coordinates- (565140.3186, 732251.91928)	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW): *Data from 2010	3.0 MGD	
*12. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2013) Population	20-Year Future (Year 2033) Population
Municipality: Verona Township	13,445	14,352
Municipality: Township of West Orange	886	908
Municipality: Borough of Essex Fells	264	264
Municipality: Borough of Caldwell	124	124
Municipality: Borough of North Caldwell	172	547
Municipality: Township of Montclair	1	1
Municipality: Township of Cedar Grove	0	0
Total	**14,892**	**16,196**
*13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW:	Current (Year 2013) Flow (in MGD)	20-Year Future (Year 2033) (in MGD)
Municipality: Verona		
Residential flow	1.126	1.194
Commercial flow	0.134	0.145
Industrial flow	0	0
Infiltration/Inflow	0	0
Municipal Total	**1.260**	**1.339**
Municipality: West Orange		
Residential flow	0.082	0.084

Commercial flow	0	0
Industrial flow	0	0
Infiltration/Inflow	0	0
Municipal Total	**0.082**	**0.084**
Municipality: Essex Fells		
Residential flow	0.023	0.023
Commercial flow	0	0
Industrial flow	0	0
Infiltration/Inflow	0	0
Municipal Total	**0.023**	**0.023**
Municipality: Caldwell		
Residential flow	0.016	0.016
Commercial flow	0	0
Industrial flow	0	0
Infiltration/Inflow	0	0
Municipal Total	**0.016**	**0.016**
Municipality: North Caldwell		
Residential flow	0.015	0.047
Commercial flow	0	0
Industrial flow	0	0
Infiltration/Inflow	0	0
Municipal Total	**0.015**	**0.047**
Municipality: Montclair		
Residential flow	0	0
Commercial flow	0	0
Industrial flow	0	0
Infiltration/Inflow	0	0
Municipal Total	**0**	**0**
Municipality: Cedar Grove		
Residential flow	0	0
Commercial flow	0.005	0.005
Industrial flow	0	0
Infiltration/Inflow	0	0
Municipal Total	**0.005**	**0.005**
Facility Total	**1.401**	**1.564**

Table C-4
(page 1 of 4)
Edward P. Decher Secondary Wastewater Treatment Facility

1. Existing or proposed facility: Existing
2. New Jersey Pollutant Discharge Elimination System Permit Number: NJ0024741
3. Discharge to ground water (dgw) or surface water (dsw): Surface (DSW)
4. Receiving water or aquifer: Arthur Kill
5. Classification of receiving water or aquifer: SE-3
6. Owner of facility: Joint Meeting of Essex and Union County
7. Operator of facility: Joint Meeting of Essex and Union County
8. Co-Permittee of facility *(where applicable)*: Not Applicable
9. Location of facility:
   a. Municipality & County Elizabeth, Union County, New Jersey
   b. Street address 500 South First Street
   c. Block(s) and Lot(s) Block Nos. 4-43, 4-44 and 4-46 and Lot Nos. 4-1435A & B
10. Location of discharge (i.e. degrees, minutes, seconds):
    a. Longitude 40°-38'-17" North b. Latitude 74°-11'-51" West
    or c. State Plane Coordinates
11. Present permitted flow or permit condition or daily maximum: 85 MGD*
    *All effluent loadings are calculated on 75 MGD.
12. Summary of population served/to be served including major seasonal fluctuations:

Present (2010) Population Served*:	Municipality	Ultimate Buildout Population Served*:
15,360	East Orange	17,235
60,700	Irvington	67,150
23,870	Maplewood	25,010
19,770	Millburn	21,720
19,078	Newark	21,829
16,960	South Orange	19,140
21,750	Hillside	25,030
11,288	Roselle Park	12,648
21,130	Summit	24,310
54,410	Union	63,080
120,570	Elizabeth	152,120
77	Montclair	89
5,917	Orange	6,581

27	Verona	30
1,073	Berkeley Heights	1,218
39	Linden	46
11,910	New Providence	13,580
44,940	West Orange	49,680
548	Livingston	594
Total 449,417		521,090

* Municipalities for which ultimate buildout was completed.

(The numbers in the facility table to not seem to match or be supported by those in Tables 6 and 7 e.g. although Table 6 says they used 25 gpd per employee that is not always the case, see Montclair and Verona (only spotted checked 3 muni); on Table 7 although they indicate that the 75 gpd/person was used that is not the case in Verona and Linden (only checked 4 muni with another 1 matching and 1 being close)

So the Commercial flow numbers shown here are based on the employement projections right? The table should specify that since normally it is based on sq.ft. of building.

13. Summary of wastewater flow received/to be received expressed in million gallons per day (mgd) and as a 30-day average flow for dsw:

14.

Present (2010 Wastewater Flow (mgd)	Municipality	Ultimate Buildout Wastewater Flow (mgd)
	East Orange Essex County	
Residential flow 1.62		1.70
Commercial flow 0.14		0.15
Industrial flow 0.00		0.00
Infiltration/Inflow 0.07		0.07
Total 1.83		1.92
	Irvington Essex County	
Residential flow 3.01		3.27
Commercial flow 0.19		0.21
Industrial flow 0.13		0.13
Infiltration/Inflow 1.72		1.72
Total 5.05		5.33
	Maplewood Essex County	
Residential flow 2.19		2.19
Commercial flow 0.16		0.17

Table C-4
(page 3 of 4)

Industrial flow	0.11	0.11
Infiltration/Inflow	0.45	0.45
Total	2.91	2.92

Millburn*
Essex County

Residential flow	2.15	2.22
Commercial flow	0.64	0.66
Industrial flow	0.00	0.00
Infiltration/Inflow	0.43	0.43
Total	3.22	3.31

* Includes Contributory Flow from Livingston

Newark
Essex County

Residential flow	4.06	4.14
Commercial flow	0.77	0.79
Industrial flow	0.00	0.00
Infiltration/Inflow	0.42	0.42
Total	5.25	5.35

South Orange
Essex County

Residential flow	2.18	2.20
Commercial flow	0.22	0.22
Industrial flow	0.00	0.00
Infiltration/Inflow	0.32	0.32
Total	2.72	2.74

Hillside
Union County

Residential flow	2.78	2.90
Commercial flow	0.31	0.32
Industrial flow	0.23	0.23
Infiltration/Inflow	0.17	0.17
Total	3.49	3.62

Roselle Park
Union County

Residential flow	1.23	1.26
Commercial flow	0.08	0.08
Industrial flow	0.002	0.002
Infiltration/Inflow	0.25	0.25
Total	1.56	1.59

Summit**
Union County

Residential flow	3.87	3.98
Commercial flow	0.58	0.59
Industrial flow	0.17	0.17
Infiltration/Inflow	0.29	0.29
Total	4.91	5.03

Table C-4
(page 4 of 4)

** Includes Contributory Flow from New Providence, and Berkeley Heights

	Union Union County	
Residential flow	2.08	2.32
Commercial flow	0.55	0.57
Industrial flow	0.53	0.53
Infiltration/Inflow	1.79	1.79
Total	4.95	5.21

	Elizabeth*** Union County	
Residential flow	13.08	13.70
Commercial flow	1.45	1.51
Industrial flow	0.65	0.65
Infiltration/Inflow	1.51	3.72
Total	16.69	19.48

*** Includes Contributory Flow from Linden

	West Orange**** Essex County	
Residential flow	4.37	4.90
Commercial flow	0.60	0.67
Industrial flow	0.00	0.00
Infiltration/Inflow	0.95	0.95
Total	5.92	6.52

**** Includes Contributory Flow from Montclair, Orange, and Verona

Total	58.50	63.12

Why are the population and flows numbers for New Providence , Summit and Berkeley Heights so different btwn Tables 2 and 3? It's all the same SSA? Why aren't the New Providence and Berkeley Heights info (and the other similar ones) individually listed as opposed to the lumping with Summit (or other as the case may be)?

Table C-5

(Sheet 1 of 4)

SEWAGE TREATMENT FACILITY INFORMATION

A.	Name of Facility:	Parsippany-Troy Hills Wastewater Treatment Plant
B.	Existing or Proposed:	Existing
C.	Ground or Surface Discharge:	Surface
D.	Owner:	Township of Parsippany-Troy Hills
E.	Operator:	Township of Parsippany-Troy Hills
F.	Co-Permittee:	Not Applicable
G.	Location - Municipality:	Parsippany-Troy Hills
	County:	Morris County
	Street Address:	Edwards Road
H.	NJPDES Permit Number:	NJ0024970
I.	Present Permitted Flow:	12.0 MGD*
J.	Present Design Capacity:	16.0 MGD
K.	Location of Discharge -	
	Latitude:	40° 50'47" N
	Longitude:	74° 20'40" W
L.	Name of Receiving Water:	Whippany River
M.	Classification of Receiving Water:	FW2

DIGITAL
SSA
Says
NJPDES FL 16
PLANNING FL 14.13

* (NJPDES permit specifies 12 MGD with allowance for 16 MGD upon certification by a Professional Engineer and approval by the Department.)

Table C-5

(Sheet 2 of 4)

N. Population Summary:

	POPULATION SERVED	
	Present Population (1990)	20-Year Future Population (2010)
Parsippany-Troy Hills	67,100	70,000
Mountain Lakes	3,900	4,100
Montville	11,000	17,000
East Hanover	10,000	12,500
Denville	40	1,800
Livingston	0	864
Total	92,040	106,264

O. Wastewater Flow Summary:

	WASTEWATER FLOW	
	Present (1990)	20-Year Future (2010)
Parsippany-Troy Hills		
Residential Flow	4.72	4.92
Commercial Flow	0.82	0.86
Industrial Flow	0.80	0.83
Infiltration and Inflow (I/I)	2.06	2.15
Sub-Total	8.40 MGD	8.76 MGD

Table C-5

(Sheet 3 of 4)

	WASTEWATER FLOW	
	Present (1990)	20-Year Future (2010)
Mountain Lakes		
Residential Flow	0.31	0.33
Commercial Flow	0.05	0.06
Industrial Flow	0	0
Infiltration and Inflow (I/I)	0.05	0.07
Sub-Total	0.41 MGD	0.46 MGD
Montville		
Residential Flow	0.87	1.35
Commercial Flow	0.25	1.03
Industrial Flow	0	0
Infiltration and Inflow (I/I)	0.08	0.12
Sub-Total	1.20 MGD	2.50 MGD
East Hanover		
Residential Flow	0.70	0.88
Commercial Flow	0.10	0.20
Industrial Flow	0.15	[0.70] **0.80**
Infiltration and Inflow (I/I)	0.55	0.57
Sub-Total	1.50 MGD	[2.35] MGD **2.45**

Table C-5

(Sheet 4 of 4)

	WASTEWATER FLOW	
	Present (1990)	20-Year Future (2010)
Denville		
Residential Flow	(negligible)	0.12
Commercial Flow	0	0.05
Industrial Flow	0	0
Infiltration and Inflow (I/I)	0	0.03
Sub-Total	0 MGD	0.20 MGD
Livingston		
Residential Flow	0	0.06
Commercial Flow	0	0
Industrial Flow	0	0
Infiltration and Inflow (I/I)	0	0.00
Sub-Total	0 MGD	0.06 MGD
Total Wastewater Flow	11.51 MGD	[14.33] MGD 14.43

Revised 7/25/97

Table C-6
(page 1 of 3)

Facility Information Table

Passaic Valley Sewerage Commissioners
Water Pollution Control Facilities

1. Existing or Proposed Facility: Existing
2. New Jersey Pollutant Discharge Elimination System Permit Number: NJ0021016
3. Discharge to Ground Water (dgw) or Surface Water (dsw): Surface Water
4. Receiving Water or Aquifer:
    a. Discharge 001 – Upper New York Bay
    b. Discharge 002 – Newark Bay
    Note: Discharge from Outfall No. 002 is restricted to the volume that exceeds the hydraulic capacity of Discharge Number 001.
5. Classification of Receiving Water of Aquifer:
    a. Upper New York Bay – SE2
    b. Newark Bay – SE3
6. Owner of Facility: Passaic Valley Sewerage Commissioners
7. Operator of Facility: Passaic Valley Sewerage Commissioners
8. Co-permittee: Not Applicable
9. Location of Facility: 600 Wilson Avenue, City of Newark, Essex County, New Jersey.
10. Location of Discharge:
    a. Discharge 001 (Upper New York Bay)
        i. Latitude: 40° 39' 16" N
        ii. Longitude: 74° 03' 42" W
    b. Discharge 002 (Newark Bay, bypass outfall for treated effluent)
        i. Latitude: 40° 42' 45" N
        ii. Longitude: 74° 07' 24" W
11. Present Permitted Flow: 330 mgd
12. Present Design Capacity: 330 mgd
13. Summary of Population for entire Service Area: see Table 1 (present) and Table 2 (2025), presented on pages 8 & 9, for a breakdown by municipality

	Present	20-Year Future (2025)
Population Served	1,395,981	1,630,095

14. Summary of Wastewater Flows for entire Service Area: see Table 1 (present) and Table 2 (2025) presented on pages 8 & 9, for a breakdown by municipality

Wastewater Flow (mgd)	Present	20-Year Future (2025)
Residential	104.699	122.257
Commercial	86.304	97.038
Industrial	17.089	17.487
Infiltration/Inflow	51.749	54.489
Total	259.841	291.272

Table C-6
(page 2 of 3)

TABLE 1 - PRESENT POPULATION AND WASTEWATER FLOWS

PVSC Meter No.	Municipality	Census 2000	Total Flow (MGD)	Industrial Flow (MGD)	Residential Flow (MGD)	Commercial Flow (MGD)	I & I (MGD)
36	Bayonne	61,842	8.037	0.382	4.638	1.568	1.449
1	Belleville	35,928	4.660	0.231	2.695	1.208	0.526
2	Bloomfield	47,683	5.679	0.039	3.576	1.105	0.958
3	Clifton	78,672	13.384	1.303	5.900	3.566	2.615
4	East Newark	2,377	0.601	0.037	0.178	0.067	0.318
6	East Rutherford	3,235	0.539	0.002	0.243	0.081	0.213
7	Elmwood Park	18,925	6.474	3.761	1.419	0.983	0.310
8	Fair Lawn	31,637	3.911	0.260	2.373	0.821	0.457
9	Garfield	29,786	3.562	0.034	2.234	0.366	0.928
10	Glen Ridge	7,271	1.060	0.137	0.545	0.128	0.250
11	Glen Rock	11,546	1.114	0.000	0.866	0.109	0.139
12	Haledon	8,252	1.097	0.017	0.619	0.167	0.294
13	Harrison	14,424	2.505	0.031	1.082	0.490	0.902
	Hawthorne	18,235					
	Ridgewood	0					
14	Hawthorne (metered)	18,235	1.984	0.046	1.368	0.222	0.348
	Jersey City	240,055					
	Union City	23,917					
31	Jersey City (metered)	263,972	42.002	0.168	19.798	12.537	9.499
15	Kearny	40,513	8.226	0.356	3.038	2.975	1.856
	Little Falls	10,853					
	Cedar Grove	2,270					
	North Caldwell	715					
16	Little Falls (metered)	13,837	1.693	0.002	1.038	0.172	0.481
	Lodi	23,971					
	Hackensack	0					
	Hasbrouck Heights	244					
	South Hackensack	79					
17	Lodi (metered)	24,294	3.158	0.055	1.822	0.672	0.609
18	Lyndhurst	19,383	3.091	0.059	1.454	1.034	0.544
19	Montclair	38,977	6.351	0.005	2.923	2.010	1.412
	Newark	221,824					
	East Orange	44,762					
	Elizabeth	0					
	Hillside	1,199					
20	Newark (metered)	267,785	82.433	7.544	20.084	41.729	13.076
22	North Arlington	15,181	2.470	0.004	1.139	1.037	0.290
	North Haledon	7,920					
	Franklin Lakes	0					
	Wyckoff	0					
23	North Haledon (metered)	7,920	0.646	0.004	0.594	0.006	0.042
24	Nutley	27,362	7.025	0.309	2.052	4.184	0.480
	Orange	26,882					
	South Orange	69					
	West Orange	12,622					
25	Orange (metered)	39,574	6.378	0.013	2.968	2.616	0.781
26	Passaic	67,861	10.843	0.204	5.090	2.780	2.770
27	Paterson	149,222	22.249	1.272	11.192	0.874	8.912
28	Prospect Park	5,779	0.500	0.000	0.433	0.007	0.060
29	Rutherford	8,150	1.035	0.000	0.611	0.190	0.234
30	Saddle Brook	13,155	1.660	0.069	0.987	0.456	0.149
32	Totowa	9,892	2.258	0.273	0.742	0.740	0.503
	Wallington	11,583					
	Wood Ridge	0					
33	Wallington (metered)	11,583	1.692	0.431	0.869	0.152	0.240
34	West Paterson	1,729	1.576	0.044	0.130	1.298	0.104
	Total	1,395,981	259.841	17.089	104.699	86.304	51.749

Table C-6
(page 3 of 3)

TABLE 2 - YEAR 2025 POPULATION AND WASTEWATER FLOW PROJECTIONS

PVSC Meter No.	Municipality	Population Projection 2025	Total Flow (MGD)	Industrial Flow (MGD)	Residential Flow (MGD)	Commercial Flow (MGD)	I & I (MGD)
36	Bayonne	75,604	9.418	0.382	5.670	1.917	1.449
1	Belleville	38,928	4.985	0.231	2.920	1.309	0.526
2	Bloomfield	51,941	6.097	0.039	3.896	1.204	0.958
3	Clifton	85,832	14.245	1.303	6.437	3.890	2.615
4	East Newark	3,007	0.666	0.037	0.225	0.085	0.318
6	East Rutherford	3,489	0.564	0.002	0.262	0.087	0.213
7	Elmwood Park	20,435	6.666	3.761	1.533	1.062	0.310
8	Fair Lawn	34,059	4.155	0.260	2.554	0.884	0.457
9	Garfield	32,210	3.774	0.034	2.416	0.396	0.928
10	Glen Ridge	7,896	1.118	0.137	0.592	0.138	0.250
11	Glen Rock	12,464	1.191	0.000	0.935	0.118	0.139
12	Haledon	9,016	1.170	0.017	0.676	0.182	0.294
13	Harrison	17,715	2.864	0.031	1.329	0.602	0.902
	Hawthorne	19,901			1.493		
	Ridgewood	0					
14	Hawthorne (metered)	19,901	2.129	0.046	1.493	0.242	0.348
	Jersey City	293,613			22.021		
	Union City	29,956			2.247		
31	Jersey City (metered)	323,569	49.302	0.168	24.268	15.368	9.499
15	Kearny	49,958	9.628	0.356	3.747	3.669	1.856
	Little Falls	11,787			0.884		
	Cedar Grove	2,436			0.183		
	North Caldwell	775			0.058		
16	Little Falls (metered)	14,998	1.794	0.002	1.125	0.187	0.481
	Lodi	25,886			1.941		
	Hackensack	0					
	Hasbrouck Heights	262			0.020		
	South Hackensack	85			0.006		
17	Lodi (metered)	26,233	3.357	0.055	1.967	0.726	0.609
18	Lyndhurst (metered)	20,930	3.289	0.059	1.570	1.117	0.544
	Lyndhurst - EnCap	7,358	0.700	0.148	0.552		
19	Montclair	42,375	6.781	0.005	3.178	2.185	1.412
	Newark	239,226			17.942		
	East Orange	48,090			3.607		
	Elizabeth	0					
	Hillside	1,256			0.094		
20	Newark (metered)	288,573	87.232	7.544	21.643	44.969	13.076
22	North Arlington	16,402	2.645	0.004	1.230	1.121	0.290
	North Haledon	8,611			0.646		
	Franklin Lakes	0					
	Wyckoff	0					
23	North Haledon (metered)	8,611	0.698	0.004	0.646	0.006	0.042
24	Nutley	29,712	7.561	0.309	2.228	4.543	0.480
	Orange	29,201			2.190		
	South Orange	75			0.006		
	West Orange	13,749			1.031		
25	Orange (metered)	43,026	6.865	0.013	3.227	2.844	0.781
26	Passaic	74,329	11.593	0.204	5.575	3.045	2.770
27	Paterson	163,033	23.366	1.272	12.228	0.954	8.912
28	Prospect Park	6,308	0.540		0.473	0.007	0.060
29	Rutherford (metered)	8,767	1.096		0.658	0.204	0.234
	Rutherford - EnCap	2,340	0.176	0.000	0.176		
30	Saddle Brook	14,123	1.766	0.069	1.059	0.490	0.149
32	Totowa	10,772	2.390	0.273	0.808	0.806	0.503
	Wallington	12,473			0.935		
	Wood-Ridge	0					
33	Wallington (metered)	12,473	1.770	0.431	0.935	0.164	0.240
34	West Paterson	1,885	1.704	0.044	0.141	1.415	0.104
	North Bergen*	49,812	7.826	0.250	3.736	1.100	2.740
	Union City *	2,013	0.151	0.000	0.151		
	NBMUA-Central WWTP*	51,825	7.977	0.250	3.887	1.100	2.740
	Total	**1,630,095**	**291.272**	**17.487**	**122.257**	**97.038**	**54.489**

* Population and flows associated with the North Bergen Municipal Utilities Authorities - Central Wastewater Treatment Plan

MALCOLM PIRNIE

TABLE 1

THE TWO BRIDGES ENVIRONMENTAL CONTROL FACILITY

Owner: Pequannock, Lincoln Park and Fairfield Sewerage Authority.

Operating Agency: Pequannock, Lincoln Park and Fairfield Sewerage Authority.

Location: Lincoln Boulevard, Lincoln Park, NJ.

NJPDES Permit Number: NJ0029386.

Permittee: Pequannock, Lincoln Park and Fairfield Sewerage Authority.

Discharge Location: Latitude 40° 54' 12" North.
Longitude 74° 16' 17" West.

Receiving Waters: Pompton River.

Classification of Receiving Waters: FW2 Non Trout Waters.

Estimated Population Served: 33,264 persons, see Table 4 for breakdown.

Actual Flow:

	MGD
Residential	2.383
Commercial/Industrial	1.413
Infiltration/Inflow	1.372
Total	5.168

See Table 4 for breakdown.

Design Capacity: 10.0 MGD average annual.

Permitted Flow: 7.5 MGD.

MALCOLM PIRNIE

TABLE 4

TWO BRIDGES ENVIRONMENTAL CONTROL FACILITY
SERVICE AREA
EXISTING POPULATIONS AND FLOWS

Estimated Existing Populations:

	Pequannock	Lincoln Park	Fairfield	PRBRSA [3]	Total
1980 Census	13,776	8,806	7,987	-	-
1990 Estimate	13,097[5]	11,970[5]	8,453[5]	26,235	59,755
Sewered	2,750	10,913	8,453	12,300	34,416
To Caldwell	-	-	(221)	-	(221)
Subtotal	2,750	10,913	8,232	12,300	34,195
North Caldwell	-	-	69	-	69
Total	2,750	10,913	8,301	12,300	34,264

Estimated Existing Average Daily Flows in MGD

	Pequannock	Lincoln Park	Fairfield	PRBRSA	Total
Residential[1]	0.179[1]	0.709[1]	0.540[1]	0.927	2.355
Ind/Comm	0.092[2]	0.135[2]	0.702[2]	0.433	1.362
Montville	-	0.011[8]	-	-	0.011
West Caldwell[7]	-	-	0.040	-	0.040
N. Caldwell Diversion	-	-	0.028[6]	-	0.028
Subtotal	0.271	0.855	1.310	1.360	3.796
I/I	0.132	0.255	0.705	0.280	1.372
Total[4]	0.403	1.110	2.015	1.640	5.168

Notes:

1. 65 gallons per capita per day.
2. Based on water meter records.
3. See Table 5 for further breakdown of PRBRSA.
4. Average for March through May 1990.
5. Population projections based upon "Official State Estimates, Population Estimates for New Jersey," July 1, 1988 by State of New Jersey, Department of Labor, Division of Labor Market and Demographic Research.
6. Average for 1989 as reported by North Caldwell in correspondence dated June 4, 1990.
7. Industrial/Commercial.
8. Alpine House Conference Center (Commercial).

Table C-8 DOMESTIC TREATMENT FACILITIES SERVING ONE MUNICIPALITY		
1. Existing or proposed facility:	Cedar Grove STP	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ0025330	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW	
4. Receiving water or aquifer:	Peckman River	
5. Classification of receiving water or aquifer:	FW2-NT	
6. Owner of facility:	Township of Cedar Grove	
7. Operator of facility:		
8. Co-Permittee of facility *(where applicabl*e):	n/a	
9. Location of facility:	Cedar Grove, NJ	
a. Municipality & County	Cedar Grove Township, Essex County	
b. Street address	340 Little Falls Road. Cedar Grove, NJ 07009	
c. Block(s) and Lot(s)	Block 212	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude- 74° 13' 26.9" b. Latitude- 40° 52' 00.2"	
	c. State Plane Coordinates- (568417.02184, 740758.63135)	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW): *Data from 2010	2.0 MGD	
12. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2013) Population	20-Year Future (Year 2033)
Total	12,555	13,568
13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW:	Current (Year 2013) Flow (in MGD)	20-Year Future (Year 2033) (in MGD)
Residential flow*	0.942	0.969
Commercial flow*	0.268	0.279
Industrial flow	0	0
Infiltration/Inflow	0	0
Facility Total	**1.210**	**1.248**

**Note: meter types are not classified in the Township. Therefore, residential flow is based on population multiplied by 75 gpd per capita per N.J.A.C. 7:15 in order to estimate the amount of residential sewage flow. Commercial flow is the difference between the Current Year Facility Total and the calculated residential flow.*

Table C-9 ON-SITE DOMESTIC TREATMENT FACILITIES		
1. Existing or proposed facility:	B & G Foods Inc.	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ0003743	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW	
4. Receiving water or aquifer:	Foulerton's Brook	
5. Classification of receiving water or aquifer:	FW2-NT	
6. Owner of facility:	B&G Foods	
7. Operator of facility:	B & G Foods Inc.	
8. Co-Permittee of facility *(where applicabl*e):	n/a	
9. Location of facility:	Roseland, NJ	
a. Municipality & County	Roseland Borough, Essex County	
b. Street address	426 Eagle Rock Ave Roseland, NJ	
c. Block(s) and Lot(s)	Block 11, Lot 30	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude- 74° 19' 05.6" b. Latitude- 40° 49' 10.7"	
	c. State Plane Coordinates- (542430.35327, 723538.74986)	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	0.016 MGD (average)	
*13. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2013) Population*	20-Year Future (Year 2033)*
Total	n/a	n/a
*14. Summary of wastewater flow received/to be received as a 3-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2013) Flow (in MGD)	20-Year Future (Year 2033) as applicable (in MGD)
Residential flow	0	0
Commercial flow	0	0
Industrial flow	0.015	0.016
Infiltration/Inflow	0	0
Facility Total	**0.015**	**0.016**

*non-contact cooling water from B&G foods

Table C-10 ON-SITE DOMESTIC TREATMENT FACILITIES		
1. Existing or proposed facility:	Prestige Rubber Manufacturing Group	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ0086436	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW	
4. Receiving water or aquifer:	Deepavaal Brook via unnamed tributary	
5. Classification of receiving water or aquifer:	FW2-NT	
6. Owner of facility:	Prestige Rubber Manufacturing Group	
7. Operator of facility:	Prestige Rubber Manufacturing Group	
8. Co-Permittee of facility *(where applicable)*:	n/a	
9. Location of facility:	11 Spielman Road, Fairfield, NJ	
a. Municipality & County	Fairfield Township, Essex County	
b. Street address	11 Spielman Road Fairfield, NJ 07004	
c. Block(s) and Lot(s)	Block 1102 Lot 6	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude- 74° 17' 28.1" b. Latitude- 40° 52' 34.6"	
	c. State Plane Coordinates- (549881.39361, 744191.90222)	
11. Present permitted flow or permit condition (DSW):	0.005 MGD	
*13. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2013) Population	20-Year Future (Year 2033)
Total	n/a	n/a
*14. Summary of wastewater flow received/to be received as a 3-day average flow for DSW:	Current (Year 2013) Flow (in MGD)	20-Year Future (Year 2033) (in MGD)
Residential flow	0	0
Commercial flow	0	0
Industrial flow	0.011	0.011
Infiltration/Inflow	0	0
Facility Total	**0.011**	**0.011**

Table C-11 ON-SITE DOMESTIC TREATMENT FACILITIES		
1. Existing or proposed facility:	Servometer Corporation	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ0027847	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW	
4. Receiving water or aquifer:	Peckman River	
5. Classification of receiving water or aquifer:	FW2-NT (C2)	
6. Owner of facility:	Servometer Corporation	
7. Operator of facility:	Servometer Corporation	
8. Co-Permittee of facility *(where applicabl*e):	n/a	
9. Location of facility:	Cedar Grove, NJ	
a. Municipality & County	Cedar Grove Township, Essex County	
b. Street address	501 Little Falls Road, Cedar Grove, NJ 07009	
c. Block(s) and Lot(s)	Block 370 Lot 102, Block 371 Lot 1	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude- 74° 13' 24.3" b. Latitude-40° 52' 10.2"	
	c. State Plane Coordinates- (568614.01742, 741770.76575)	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	0.0018 MGD	
*13. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2013) Flow (in MGD)	20-Year Future (Year 2033 (in MGD)
Total	n/a	n/a
*14. Summary of wastewater flow received/to be received as a 3-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2013) Flow (in MGD)	20-Year Future (Year 2033) as applicable (in MGD)
Residential flow	0	0
Commercial flow	0	0
Industrial flow	0.000975	0.000975
Infiltration/Inflow	0	0
Facility Total	**0.000975**	**0.000975**

Table C-12 INDUSTRIAL TREATMENT FACILITIES		
1. Existing or proposed facility:	Exxon S/S 31310	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0155501	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW	
4. Receiving water or aquifer:	Canoe Brook	
5. Classification of receiving water or aquifer:	FW2-NT	
6. Owner of facility:	Exxon	
7. Operator of facility:	Exxon	
8. Co-Permittee of facility *(where applicabl*e):	n/a	
9. Location of facility:	Livingston, NJ	
a. Municipality & County	Livingston Township, Essex County	
b. Street address	38 East Mount Pleasant Ave Livingston, NJ 07039	
c. Block(s) and Lot(s)	Block 3700, Lot 8	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude- 74° 18' 48.2" b. Latitude- 40° 47' 46.4"	
	c. State Plane Coordinates- (543790.89359, 715011.86329)	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	n/a – treatment units shall operate at the optimal average design flow rate for maximum groundwater cleanup	
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 (Year 2012) Flow (in MGD)	20-Year Future (Year 2033) (in MGD) *specify one*
Commercial flow	-	-
Industrial flow	0.001	0.001
Infiltration/Inflow	-	-
Facility Total	**0.001**	**0.001**

Appendix D – Coordination, Consistency and Notification Process

Documentation of notifications is included in this appendix, based on the following listing:

Table E-1. County WMP Notifications and Responses		
Notification Recipient	**Notification Date**	**Response Date**

Appendix E – Ordinances for Septic System Development and Connection in Sewer Service Areas

Municipal ordinances regarding this topic are included in this appendix. The status of such ordinances is as follows:

Table E-1. Ordinances for Septic System Development in Sewer Service Areas		
Municipality	**Ordinance Name/Number**	**Adoption Date**
Belleville	None	None
Bloomfield	None	None
Caldwell	Article VI/Individual Subsurface Septic Systems	9/4/1990
Cedar Grove	Chapter 133/ Individual Subsurface Septic Systems	1963
Orange	None	None
East Orange	None	None
Essex Fells	None	None
Fairfield	None	None
Glen Ridge	None	None
Irvington	None	None
Livingston	None	None
Maplewood	None	None
Millburn	Disposal of Wastewater San Code 90	1967
Montclair	None	None
Newark	None	None
North Caldwell	None	None
Nutley	None	None
Roseland	None	None
South Orange	None	None
Verona	None	None
West Caldwell	None	None
West Orange	None	None

Appendix F – Ordinances for Dry Conveyances in Sewer Service Areas

Municipal ordinances regarding this topic are included in this appendix. The status of such ordinances is as follows:

Table F-1. Ordinances for Dry Conveyances in Sewer Service Areas		
Municipality	**Ordinance Name/Number**	**Adoption Date**
Belleville	None	None
Bloomfield	None	None
Caldwell	None	None
Cedar Grove	None	None
Orange	None	None
East Orange	None	None
Essex Fells	None	None
Fairfield	None	None
Glen Ridge	None	None
Irvington	None	None
Livingston	None	None
Maplewood	None	None
Millburn	None	None
Montclair	None	None
Newark	None	None
North Caldwell	None	None
Nutley	None	None
Roseland	None	None
South Orange	None	None
Verona	None	None
West Caldwell	None	None
West Orange	None	None

Appendix G – Ordinances for Septic System Maintenance

Municipal ordinances regarding this topic are included in this appendix. The status of such ordinances is as follows:

Table G-1. Ordinances for Septic System Maintenance		
Municipality	**Ordinance Name/Number**	**Adoption Date**
Belleville	None	None
Bloomfield	None	None
Caldwell	None	None
Cedar Grove	None	None
Orange	None	None
East Orange	None	None
Essex Fells	None	None
Fairfield	None	None
Glen Ridge	None	None
Irvington	None	None
Livingston	None	None
Maplewood	None	None
Millburn	None	None
Montclair	None	None
Newark	None	None
North Caldwell	None	None
Nutley	None	None
Roseland	None	None
South Orange	None	None
Verona	None	None
West Caldwell	None	None
West Orange	None	None

Appendix H – County Certification of Municipal Stormwater Ordinances

County certification letters for municipal stormwater management ordinances are included in this appendix. The status of such ordinances is as follows:

Table I-1. Ordinances for Municipal Stormwater Management		
Municipality	**Ordinance Name/Number**	**Adoption Date**
Belleville	Stormwater Management	2004-2009
Bloomfield	Stormwater Management	2004-2009
Caldwell	Stormwater Management	2004-2009
Cedar Grove	Stormwater Management	2004-2009
Orange	Stormwater Management	2004-2009
East Orange	Stormwater Management	2004-2009
Essex Fells	Stormwater Management	2004-2009
Fairfield	Stormwater Management	2004-2009
Glen Ridge	Stormwater Management	2004-2009
Irvington	Stormwater Management	2004-2009
Livingston	Stormwater Management	2004-2009
Maplewood	Stormwater Management	2004-2009
Millburn	Stormwater Management	2004-2009
Montclair	Stormwater Management	2004-2009
Newark	Stormwater Management	2004-2009
North Caldwell	Stormwater Management	2004-2009
Nutley	Stormwater Management	2004-2009
Roseland	Stormwater Management	2004-2009
South Orange	Stormwater Management	2004-2009
Verona	Stormwater Management	2004-2009
West Caldwell	Stormwater Management	2004-2009
West Orange	Stormwater Management	2004-2009

Appendix I – Ordinances for Riparian Zone Protection

Municipal ordinances regarding this topic are included in this appendix. The status of such ordinances is as follows:

Table J-1. Ordinances for Riparian Zone Protection

Municipality	Ordinance Name/Number	Adoption Date
Belleville	None	None
Bloomfield	None	None
Caldwell	None	None
Cedar Grove	None	None
Orange	None	None
East Orange	None	None
Essex Fells	None	None
Fairfield	None	None
Glen Ridge	None	None
Irvington	None	None
Livingston	Unconforming to Model	Unk
Maplewood	None	None
Millburn	Unconforming to Model	Unk
Montclair	None	None
Newark	None	None
North Caldwell	None	None
Nutley	None	None
Roseland	None	None
South Orange	None	None
Verona	None	None
West Caldwell	None	None
West Orange	None	None

Appendix J – Ordinances for Steep Slope Protection

Municipal ordinances regarding this topic are included in this appendix. The status of such ordinances is as follows:

Table K-1. Ordinances for Steep Slope Protection		
Municipality	**Ordinance Name/Number**	**Adoption Date**
Belleville	None	None
Bloomfield	None	None
Caldwell	None	None
Cedar Grove	None	None
Orange	None	None
East Orange	None	None
Essex Fells	None	None
Fairfield	None	None
Glen Ridge	None	None
Irvington	None	None
Livingston	Unconforming to Model	Unk
Maplewood	None	None
Millburn	Unconforming to Model	Unk
Montclair	None	None
Newark	None	None
North Caldwell	None	None
Nutley	None	None
Roseland	None	None
South Orange	None	None
Verona	None	None
West Caldwell	None	None
West Orange	None	None

Appendix K – Zoning Ordinance and Municipal Master Plan Status

Municipal ordinances regarding this topic are included in this appendix. The status of such ordinances is as follows:

Table L-1. Zoning Ordinance and Municipal Master Plan Status		
Municipality	**Master Plan Date**	**Zoning Ordinance Date**
Belleville		
Bloomfield		
Caldwell		
Cedar Grove		
Orange		
East Orange		
Essex Fells		
Fairfield		
Glen Ridge		
Irvington		
Livingston		2003
Maplewood		2011
Millburn		Unk
Montclair		2012
Newark		None
North Caldwell		None
Nutley		2002
Roseland		None
South Orange		None
Verona		2013
West Caldwell		2013
West Orange		None

Appendix L – Summary and Response to Public Comments

Comments were received from the following public interests through the public hearing (transcript attached by reference) and written comments:

No comments received

Appendix M – NJTPA Municipal Forecasts

Population projection forecasts attached.

Appendix N – NJDEP Public Water System Deficit/Surplus Analyses

Attached for each municipal water system.

Municipality	**Attached**
Caldwell	Yes
Cedar Grove	Yes
Essex Fells	Yes
Fairfield	Yes
Livingston	Yes
North Caldwell	Yes
Roseland	Yes
Verona	Yes
West Caldwell	Yes

Public Water System Deficit/Surplus

CALDWELL WATER DEPARTMENT

PWSID: 0703001
County: Essex

Last Updated: 12/05/13

Glossary of Terms Listed Below

Water Supply Firm Capacity: 1.400 MGD

Available Water Supply Limits

	Allocation	Contract	Total
Monthly Limit	N/A MGM	40.000 MGM	40.000 MGM
Yearly Limit	N/A MGY	400.000 MGY	400.000 MGY

Water Demand

	Current Peak	Date	Committed Peak	Total Peak
Daily Demand	1.004 MGD	07/2010	0.000 MGD	1.004 MGD
Monthly Demand	31.116 MGM	07/2010	0.000 MGM	31.116 MGM
Yearly Demand	289.565 MGY	2010	0.000 MGY	289.565 MGY

Water Supply Deficit or Surplus

Firm Capacity	Water Allocation Permit
0.396 MGD	8.884 MGM
	110.435 MGY

Note: Negative values (a deficit) indicate a shortfall in firm capacity and/or diversion privileges or available supplies through bulk purchase agreements.

Bureau of Water System and Well Permitting Comments:
Caldwell purchases water from Essex Fells (PWSID0706001). a new contract was approval by the BWA on June 5 - 2013 and will expire on January 31 - 2020. Updated up to Sept 2013.

Bureau of Water Allocation Comments:
Contract Approved.

For more information concerning water supply deficit and surplus, please refer to:

- Firm Capacity and Water Allocation Analysis (Pdf Format)
- Currently Effective Water Allocation Permits by County
  This report displays all effective water allocation permits issued by the department.
- Pending Water Allocation Permits with Requests for a Hearing
  All pending water allocation permits with public hearing requests.
- Water Allocation Permits Made Effective within a Selected Timeframe
  This report displays water alloction permits based on a specified date range.

Questions regarding safe demands and firm capacity please contact the Bureau of Water System and Well Permitting at 609-984-6831 or for questions concerning water allocation and status please contact the Bureau of Water Allocation at 609-292-2957.

Questions may also be sent to the Division of Water Supply

back to search results

Glossary of Terms

Allocation Limit: The maximum allowed by a valid Water Allocation Permit issued by the Bureau of Water Allocation. This may be surface or ground water, and may be expressed in MGD, MGM, MGY or some combination thereof. Withdrawals may also be limited by other factors and have seasonal or other restrictions such as passing flow requirements.

Committed Peak Demand: The demand associated with projects that have been approved for ultimate connection to the system, but are not yet constructed as indicated through the submission of construction certifications or certificates of occupancy. This is calculated by totaling the demand as included in Water Main Extension (WME) permits and the demand associated with projects not requiring a WME permit. For various review purposes this quantity may be represented as MGD, MGM and/or MGY.

Contract Limit: Purchased water, where regulated by an approved service contract, may be included in the overall allocation quantity where appropriate. Contracts may exist with minimum, maximum, seasonal or other restrictions. In some instances, the value is an estimate, not an exact limit.

Current Peak Demand: This is the average day of the highest recorded demand month occurring within the last five (5) years. (For the purpose of this table, the calculation for current peak demand was based on 31 days. Systems will be reviewed on an individual basis.) This includes water from a system's own sources and all other sources of water (i.e. purchased water).

Firm Capacity: Adequate pumping equipment and/or treatment capacity (excluding coagulation, flocculation and sedimentation) to meet peak daily demand, when the largest pumping unit or treatment unit is out of service. The value is represented in MGD.

Firm Capacity Deficit or Surplus = (Firm Capacity - Total Peak Daily Demand): The difference between the Firm Capacity and the sum of the peak daily demand and committed daily demand. This is a measure of the physical ability to provide treated water at adequate pressure when the largest pumping unit or treatment unit is out of service. Negative values indicate a shortfall in Firm Capacity.

Requested Allocation: The amount of water the public water system is requesting as part of its water allocation permit application, including existing allocations. This value is represented in MGM and MGY.

Total Peak Water Demand: The sum of the public water system's current peak demand and committed peak demand. The value is represented in MGD, MGM, and MGY.

Total Available Water Supply: The sum of the Allocation Limit and Contract Limit. This value is represented in MGM and MGY.

Water Supply Deficit or Surplus = (Total Water Allocation Permit Limit- Total Peak Demand): The monthly and/or annual limitations of an Allocation Permit minus the sum of the monthly and/or annual demands recorded based on the water use records plus the monthly and/or annual demand projected for approved but not yet constructed projects. Negative values indicate a shortfall in diversion privileges or available supplies through bulk purchase agreements.

back to top

Public Water System Deficit/Surplus

CEDAR GROVE

PWSID: 0704001
County: Essex

Last Updated: 12/05/13

Glossary of Terms Listed Below

Water Supply Firm Capacity: 1.940 MGD

Available Water Supply Limits

	Allocation	Contract	Total
Monthly Limit	N/A MGM	60.140 MGM	60.140 MGM
Yearly Limit	N/A MGY	620.500 MGY	620.500 MGY

Water Demand

	Current Peak	Date	Committed Peak	Total Peak
Daily Demand	2.139 MGD	07/2011	0.031 MGD	2.170 MGD
Monthly Demand	66.300 MGM	07/2011	0.480 MGM	66.780 MGM
Yearly Demand	491.074 MGY	2009	3.771 MGY	494.845 MGY

Water Supply Deficit or Surplus

Firm Capacity	Water Allocation Permit
-0.230 MGD	-6.640 MGM
	125.655 MGY

Note: Negative values (a deficit) indicate a shortfall in firm capacity and/or diversion privileges or available supplies through bulk purchase agreements.

Bureau of Water System and Well Permitting Comments:
Bulk purchases from NJDWC and PVWC;Contract with Kearny Water Department expired and it will not be renewed. Overdraft provisions of 120% is included. Updated up to June 2013.

Bureau of Water Allocation Comments:
no comments provided

For more information concerning water supply deficit and surplus, please refer to:

- Firm Capacity and Water Allocation Analysis (Pdf Format)
- Currently Effective Water Allocation Permits by County
  This report displays all effective water allocation permits issued by the department.
- Pending Water Allocation Permits with Requests for a Hearing
  All pending water allocation permits with public hearing requests.
- Water Allocation Permits Made Effective within a Selected Timeframe
  This report displays water alloction permits based on a specified date range.

Questions regarding safe demands and firm capacity please contact the Bureau of Water System and Well Permitting at 609-984-6831 or for questions concerning water allocation and status please contact the Bureau of Water Allocation at 609-292-2957.

Questions may also be sent to the Division of Water Supply

back to search results

Glossary of Terms

Allocation Limit: The maximum allowed by a valid Water Allocation Permit issued by the Bureau of Water Allocation. This may be surface or ground water, and may be expressed in MGD, MGM, MGY or some combination thereof. Withdrawals may also be limited by other factors and have seasonal or other restrictions such as passing flow requirements.

Committed Peak Demand: The demand associated with projects that have been approved for ultimate connection to the system, but are not yet constructed as indicated through the submission of construction certifications or certificates of occupancy. This is calculated by totaling the demand as included in Water Main Extension (WME) permits and the demand associated with projects not requiring a WME permit. For various review purposes this quantity may be represented as MGD, MGM and/or MGY.

Contract Limit: Purchased water, where regulated by an approved service contract, may be included in the overall allocation quantity where appropriate. Contracts may exist with minimum, maximum, seasonal or other restrictions. In some instances, the value is an estimate, not an exact limit.

Current Peak Demand: This is the average day of the highest recorded demand month occurring within the last five (5) years. (For the purpose of this table, the calculation for current peak demand was based on 31 days. Systems will be reviewed on an individual basis.) This includes water from a system's own sources and all other sources of water (i.e. purchased water).

Firm Capacity: Adequate pumping equipment and/or treatment capacity (excluding coagulation, flocculation and sedimentation) to meet peak daily demand, when the largest pumping unit or treatment unit is out of service. The value is represented in MGD.

Firm Capacity Deficit or Surplus = (Firm Capacity - Total Peak Daily Demand): The difference between the Firm Capacity and the sum of the peak daily demand and committed daily demand. This is a measure of the physical ability to provide treated water at adequate pressure when the largest pumping unit or treatment unit is out of service. Negative values indicate a shortfall in Firm Capacity.

Requested Allocation: The amount of water the public water system is requesting as part of its water allocation permit application, including existing allocations. This value is represented in MGM and MGY.

Total Peak Water Demand: The sum of the public water system's current peak demand and committed peak demand. The value is represented in MGD, MGM, and MGY.

Total Available Water Supply: The sum of the Allocation Limit and Contract Limit. This value is represented in MGM and MGY.

Water Supply Deficit or Surplus = (Total Water Allocation Permit Limit- Total Peak Demand): The monthly and/or annual limitations of an Allocation Permit minus the sum of the monthly and/or annual demands recorded based on the water use records plus the monthly and/or annual demand projected for approved but not yet constructed projects. Negative values indicate a shortfall in diversion privileges or available supplies through bulk purchase agreements.

back to top

Public Water System Deficit/Surplus

ESSEX FELLS BOROUGH

PWSID: 0706001
County: Essex

Last Updated: 11/27/12

Glossary of Terms Listed Below

Water Supply Firm Capacity: 5.184 MGD

Available Water Supply Limits

	Allocation	Contract	Total
Monthly Limit	155.000 MGM	N/A MGM	155.000 MGM
Yearly Limit	1550.000 MGY	N/A MGY	1550.000 MGY

Water Demand

	Current Peak	Date	Committed Peak	Total Peak
Daily Demand	4.319 MGD	07/2011	0.019 MGD	4.338 MGD
Monthly Demand	133.897 MGM	07/2011	0.294 MGM	134.191 MGM
Yearly Demand	1050.062 MGY	2009	2.312 MGY	1052.374 MGY

Water Supply Deficit or Surplus

Firm Capacity	Water Allocation Permit
0.846 MGD	20.809 MGM
	497.626 MGY

Note: Negative values (a deficit) indicate a shortfall in firm capacity and/or diversion privileges or available supplies through bulk purchase agreements.

Bureau of Water System and Well Permitting Comments:
Updted up to Sept. 2012.

Bureau of Water Allocation Comments:
no comments provided

For more information concerning water supply deficit and surplus, please refer to:

- Firm Capacity and Water Allocation Analysis (Pdf Format)
- Currently Effective Water Allocation Permits by County
  This report displays all effective water allocation permits issued by the department.
- Pending Water Allocation Permits with Requests for a Hearing
  All pending water allocation permits with public hearing requests.
- Water Allocation Permits Made Effective within a Selected Timeframe
  This report displays water alloction permits based on a specified date range.

Questions regarding safe demands and firm capacity please contact the Bureau of Water System and Well Permitting at 609-984-6831 or for questions concerning water allocation and status please contact the Bureau of Water Allocation at 609-292-2957.

Questions may also be sent to the Division of Water Supply

back to search results

Glossary of Terms

Allocation Limit: The maximum allowed by a valid Water Allocation Permit issued by the Bureau of Water Allocation. This may be surface or ground water, and may be expressed in MGD, MGM, MGY or some combination thereof. Withdrawals may also be limited by other factors and have seasonal or other restrictions such as passing flow requirements.

Committed Peak Demand: The demand associated with projects that have been approved for ultimate connection to the system, but are not yet constructed as indicated through the submission of construction certifications or certificates of occupancy. This is calculated by totaling the demand as included in Water Main Extension (WME) permits and the demand associated with projects not requiring a WME permit. For various review purposes this quantity may be represented as MGD, MGM and/or MGY.

Contract Limit: Purchased water, where regulated by an approved service contract, may be included in the overall allocation quantity where appropriate. Contracts may exist with minimum, maximum, seasonal or other restrictions. In some instances, the value is an estimate, not an exact limit.

Current Peak Demand: This is the average day of the highest recorded demand month occurring within the last five (5) years. (For the purpose of this table, the calculation for current peak demand was based on 31 days. Systems will be reviewed on an individual basis.) This includes water from a system's own sources and all other sources of water (i.e. purchased water).

Firm Capacity: Adequate pumping equipment and/or treatment capacity (excluding coagulation, flocculation and sedimentation) to meet peak daily demand, when the largest pumping unit or treatment unit is out of service. The value is represented in MGD.

Firm Capacity Deficit or Surplus = (Firm Capacity - Total Peak Daily Demand): The difference between the Firm Capacity and the sum of the peak daily demand and committed daily demand. This is a measure of the physical ability to provide treated water at adequate pressure when the largest pumping unit or treatment unit is out of service. Negative values indicate a shortfall in Firm Capacity.

Requested Allocation: The amount of water the public water system is requesting as part of its water allocation permit application, including existing allocations. This value is represented in MGM and MGY.

Total Peak Water Demand: The sum of the public water system's current peak demand and committed peak demand. The value is represented in MGD, MGM, and MGY.

Total Available Water Supply: The sum of the Allocation Limit and Contract Limit. This value is represented in MGM and MGY.

Water Supply Deficit or Surplus = (Total Water Allocation Permit Limit- Total Peak Demand): The monthly and/or annual limitations of an Allocation Permit minus the sum of the monthly and/or annual demands recorded based on the water use records plus the monthly and/or annual demand projected for approved but not yet constructed projects. Negative values indicate a shortfall in diversion privileges or available supplies through bulk purchase agreements.

back to top

Public Water System Deficit/Surplus

FAIRFIELD TOWNSHIP WATER DEPARTMENT

PWSID: 0707001
County: Essex

Last Updated: 12/05/13

Glossary of Terms Listed Below

Water Supply Firm Capacity: 2.750 MGD

Available Water Supply Limits

	Allocation	Contract	Total
Monthly Limit	N/A MGM	85.250 MGM	85.250 MGM
Yearly Limit	N/A MGY	590.000 MGY	590.000 MGY

Water Demand

	Current Peak	Date	Committed Peak	Total Peak
Daily Demand	2.290 MGD	07/2011	0.000 MGD	2.290 MGD
Monthly Demand	71.000 MGM	07/2011	0.000 MGM	71.000 MGM
Yearly Demand	488.000 MGY	2011	0.000 MGY	488.000 MGY

Water Supply Deficit or Surplus

Firm Capacity	Water Allocation Permit
0.460 MGD	14.250 MGM
	102.000 MGY

Note: Negative values (a deficit) indicate a shortfall in firm capacity and/or diversion privileges or available supplies through bulk purchase agreements.

Bureau of Water System and Well Permitting Comments:
Bulk purchases from PVWC. Updated Sept 2013.

Bureau of Water Allocation Comments:
no comments provided

For more information concerning water supply deficit and surplus, please refer to:

- Firm Capacity and Water Allocation Analysis (Pdf Format)
- Currently Effective Water Allocation Permits by County
  This report displays all effective water allocation permits issued by the department.
- Pending Water Allocation Permits with Requests for a Hearing
  All pending water allocation permits with public hearing requests.
- Water Allocation Permits Made Effective within a Selected Timeframe
  This report displays water alloction permits based on a specified date range.

Questions regarding safe demands and firm capacity please contact the Bureau of Water System and Well Permitting at 609-984-6831 or for questions concerning water allocation and status please contact the Bureau of Water Allocation at 609-292-2957.

Questions may also be sent to the Division of Water Supply

back to search results

Glossary of Terms

Allocation Limit: The maximum allowed by a valid Water Allocation Permit issued by the Bureau of Water Allocation. This may be surface or ground water, and may be expressed in MGD, MGM, MGY or some combination thereof. Withdrawals may also be limited by other factors and have seasonal or other restrictions such as passing flow requirements.

Committed Peak Demand: The demand associated with projects that have been approved for ultimate connection to the system, but are not yet constructed as indicated through the submission of construction certifications or certificates of occupancy. This is calculated by totaling the demand as included in Water Main Extension (WME) permits and the demand associated with projects not requiring a WME permit. For various review purposes this quantity may be represented as MGD, MGM and/or MGY.

Contract Limit: Purchased water, where regulated by an approved service contract, may be included in the overall allocation quantity where appropriate. Contracts may exist with minimum, maximum, seasonal or other restrictions. In some instances, the value is an estimate, not an exact limit.

Current Peak Demand: This is the average day of the highest recorded demand month occurring within the last five (5) years. (For the purpose of this table, the calculation for current peak demand was based on 31 days. Systems will be reviewed on an individual basis.) This includes water from a system's own sources and all other sources of water (i.e. purchased water).

Firm Capacity: Adequate pumping equipment and/or treatment capacity (excluding coagulation, flocculation and sedimentation) to meet peak daily demand, when the largest pumping unit or treatment unit is out of service. The value is represented in MGD.

Firm Capacity Deficit or Surplus = (Firm Capacity - Total Peak Daily Demand): The difference between the Firm Capacity and the sum of the peak daily demand and committed daily demand. This is a measure of the physical ability to provide treated water at adequate pressure when the largest pumping unit or treatment unit is out of service. Negative values indicate a shortfall in Firm Capacity.

Requested Allocation: The amount of water the public water system is requesting as part of its water allocation permit application, including existing allocations. This value is represented in MGM and MGY.

Total Peak Water Demand: The sum of the public water system's current peak demand and committed peak demand. The value is represented in MGD, MGM, and MGY.

Total Available Water Supply: The sum of the Allocation Limit and Contract Limit. This value is represented in MGM and MGY.

Water Supply Deficit or Surplus = (Total Water Allocation Permit Limit- Total Peak Demand): The monthly and/or annual limitations of an Allocation Permit minus the sum of the monthly and/or annual demands recorded based on the water use records plus the monthly and/or annual demand projected for approved but not yet constructed projects. Negative values indicate a shortfall in diversion privileges or available supplies through bulk purchase agreements.

back to top

Public Water System Deficit/Surplus

LIVINGSTON TOWNSHIP WATER DIVISION

PWSID: 0710001
County: Essex

Last Updated: 12/05/13

Glossary of Terms Listed Below

Water Supply Firm Capacity: 5.563 MGD

Available Water Supply Limits

	Allocation	Contract	Total
Monthly Limit	148.800 MGM	32.690 MGM	181.490 MGM
Yearly Limit	1328.000 MGY	300.000 MGY	1628.000 MGY

Water Demand

	Current Peak	Date	Committed Peak	Total Peak
Daily Demand	6.202 MGD	07/2010	0.088 MGD	6.290 MGD
Monthly Demand	192.268 MGM	07/2010	1.364 MGM	193.632 MGM
Yearly Demand	1403.912 MGY	2012	10.707 MGY	1414.619 MGY

Water Supply Deficit or Surplus

Firm Capacity	Water Allocation Permit
-0.727 MGD	-12.142 MGM
	213.381 MGY

Note: Negative values (a deficit) indicate a shortfall in firm capacity and/or diversion privileges or available supplies through bulk purchase agreements.

Bureau of Water System and Well Permitting Comments:
Bulk Purchase from NJAWC. Contract under review (1.261 mgd; 32.69 mgm; 300 mgy). Updated up to Sept 2013.

Bureau of Water Allocation Comments:
Two backup well application permit under review.

For more information concerning water supply deficit and surplus, please refer to:

- Firm Capacity and Water Allocation Analysis (Pdf Format)
- Currently Effective Water Allocation Permits by County
  This report displays all effective water allocation permits issued by the department.
- Pending Water Allocation Permits with Requests for a Hearing
  All pending water allocation permits with public hearing requests.
- Water Allocation Permits Made Effective within a Selected Timeframe
  This report displays water alloction permits based on a specified date range.

Questions regarding safe demands and firm capacity please contact the Bureau of Water System and Well Permitting at 609-984-6831 or for questions concerning water allocation and status please contact the Bureau of Water Allocation at 609-292-2957.

Questions may also be sent to the Division of Water Supply

back to search results

Glossary of Terms

Allocation Limit: The maximum allowed by a valid Water Allocation Permit issued by the Bureau of Water Allocation. This may be surface or ground water, and may be expressed in MGD, MGM, MGY or some combination thereof. Withdrawals may also be limited by other factors and have seasonal or other restrictions such as passing flow requirements.

Committed Peak Demand: The demand associated with projects that have been approved for ultimate connection to the system, but are not yet constructed as indicated through the submission of construction certifications or certificates of occupancy. This is calculated by totaling the demand as included in Water Main Extension (WME) permits and the demand associated with projects not requiring a WME permit. For various review purposes this quantity may be represented as MGD, MGM and/or MGY.

Contract Limit: Purchased water, where regulated by an approved service contract, may be included in the overall allocation quantity where appropriate. Contracts may exist with minimum, maximum, seasonal or other restrictions. In some instances, the value is an estimate, not an exact limit.

Current Peak Demand: This is the average day of the highest recorded demand month occurring within the last five (5) years. (For the purpose of this table, the calculation for current peak demand was based on 31 days. Systems will be reviewed on an individual basis.) This includes water from a system's own sources and all other sources of water (i.e. purchased water).

Firm Capacity: Adequate pumping equipment and/or treatment capacity (excluding coagulation, flocculation and sedimentation) to meet peak daily demand, when the largest pumping unit or treatment unit is out of service. The value is represented in MGD.

Firm Capacity Deficit or Surplus = (Firm Capacity - Total Peak Daily Demand): The difference between the Firm Capacity and the sum of the peak daily demand and committed daily demand. This is a measure of the physical ability to provide treated water at adequate pressure when the largest pumping unit or treatment unit is out of service. Negative values indicate a shortfall in Firm Capacity.

Requested Allocation: The amount of water the public water system is requesting as part of its water allocation permit application, including existing allocations. This value is represented in MGM and MGY.

Total Peak Water Demand: The sum of the public water system's current peak demand and committed peak demand. The value is represented in MGD, MGM, and MGY.

Total Available Water Supply: The sum of the Allocation Limit and Contract Limit. This value is represented in MGM and MGY.

Water Supply Deficit or Surplus = (Total Water Allocation Permit Limit- Total Peak Demand): The monthly and/or annual limitations of an Allocation Permit minus the sum of the monthly and/or annual demands recorded based on the water use records plus the monthly and/or annual demand projected for approved but not yet constructed projects. Negative values indicate a shortfall in diversion privileges or available supplies through bulk purchase agreements.

back to top

Public Water System Deficit/Surplus

NORTH CALDWELL WATER DEPARTMENT

PWSID: 0715001
County: Essex

Last Updated: 12/05/13

Glossary of Terms Listed Below

Water Supply Firm Capacity: 1.000 MGD

Available Water Supply Limits

	Allocation	Contract	Total
Monthly Limit	N/A MGM	31.000 MGM	31.000 MGM
Yearly Limit	N/A MGY	365.000 MGY	365.000 MGY

Water Demand

	Current Peak	Date	Committed Peak	Total Peak
Daily Demand	1.632 MGD	07/2011	0.024 MGD	1.656 MGD
Monthly Demand	50.600 MGM	07/2011	0.372 MGM	50.972 MGM
Yearly Demand	373.820 MGY	2011	2.920 MGY	376.740 MGY

Water Supply Deficit or Surplus

Firm Capacity	Water Allocation Permit
-0.656 MGD	-19.972 MGM
	-11.740 MGY

Note: Negative values (a deficit) indicate a shortfall in firm capacity and/or diversion privileges or available supplies through bulk purchase agreements.

Bureau of Water System and Well Permitting Comments:
The contract between Essex Fells and North Caldwell has expired. NC also has a 1.0 mgd contract with PVWSC; that contract will expire 4-30-2016. Updated up to Sept. 2013.

Bureau of Water Allocation Comments:
no comments provided

For more information concerning water supply deficit and surplus, please refer to:

- Firm Capacity and Water Allocation Analysis (Pdf Format)
- Currently Effective Water Allocation Permits by County
  This report displays all effective water allocation permits issued by the department.
- Pending Water Allocation Permits with Requests for a Hearing
  All pending water allocation permits with public hearing requests.
- Water Allocation Permits Made Effective within a Selected Timeframe
  This report displays water alloction permits based on a specified date range.

Questions regarding safe demands and firm capacity please contact the Bureau of Water System and Well Permitting at 609-984-6831 or for questions concerning water allocation and status please contact the Bureau of Water Allocation at 609-292-2957.

Questions may also be sent to the Division of Water Supply

back to search results

Glossary of Terms

Allocation Limit: The maximum allowed by a valid Water Allocation Permit issued by the Bureau of Water Allocation. This may be surface or ground water, and may be expressed in MGD, MGM, MGY or some combination thereof. Withdrawals may also be limited by other factors and have seasonal or other restrictions such as passing flow requirements.

Committed Peak Demand: The demand associated with projects that have been approved for ultimate connection to the system, but are not yet constructed as indicated through the submission of construction certifications or certificates of occupancy. This is calculated by totaling the demand as included in Water Main Extension (WME) permits and the demand associated with projects not requiring a WME permit. For various review purposes this quantity may be represented as MGD, MGM and/or MGY.

Contract Limit: Purchased water, where regulated by an approved service contract, may be included in the overall allocation quantity where appropriate. Contracts may exist with minimum, maximum, seasonal or other restrictions. In some instances, the value is an estimate, not an exact limit.

Current Peak Demand: This is the average day of the highest recorded demand month occurring within the last five (5) years. (For the purpose of this table, the calculation for current peak demand was based on 31 days. Systems will be reviewed on an individual basis.) This includes water from a system's own sources and all other sources of water (i.e. purchased water).

Firm Capacity: Adequate pumping equipment and/or treatment capacity (excluding coagulation, flocculation and sedimentation) to meet peak daily demand, when the largest pumping unit or treatment unit is out of service. The value is represented in MGD.

Firm Capacity Deficit or Surplus = (Firm Capacity - Total Peak Daily Demand): The difference between the Firm Capacity and the sum of the peak daily demand and committed daily demand. This is a measure of the physical ability to provide treated water at adequate pressure when the largest pumping unit or treatment unit is out of service. Negative values indicate a shortfall in Firm Capacity.

Requested Allocation: The amount of water the public water system is requesting as part of its water allocation permit application, including existing allocations. This value is represented in MGM and MGY.

Total Peak Water Demand: The sum of the public water system's current peak demand and committed peak demand. The value is represented in MGD, MGM, and MGY.

Total Available Water Supply: The sum of the Allocation Limit and Contract Limit. This value is represented in MGM and MGY.

Water Supply Deficit or Surplus = (Total Water Allocation Permit Limit- Total Peak Demand): The monthly and/or annual limitations of an Allocation Permit minus the sum of the monthly and/or annual demands recorded based on the water use records plus the monthly and/or annual demand projected for approved but not yet constructed projects. Negative values indicate a shortfall in diversion privileges or available supplies through bulk purchase agreements.

back to top

Public Water System Deficit/Surplus

ROSELAND BOROUGH WATER DEPARTMENT

PWSID: 0718001
County: Essex

Last Updated: 12/12/13

Glossary of Terms Listed Below

Water Supply Firm Capacity: 0.000 MGD

Available Water Supply Limits

	Allocation	Contract	Total
Monthly Limit	N/A MGM	0.000 MGM	0.000 MGM
Yearly Limit	N/A MGY	0.000 MGY	0.000 MGY

Water Demand

	Current Peak	Date	Committed Peak	Total Peak
Daily Demand	1.365 MGD	07/2010	0.000 MGD	1.365 MGD
Monthly Demand	42.300 MGM	07/2010	0.000 MGM	42.300 MGM
Yearly Demand	348.200 MGY	2009	0.000 MGY	348.200 MGY

Water Supply Deficit or Surplus

Firm Capacity	Water Allocation Permit
-1.365 MGD	-42.300 MGM
	-348.200 MGY

Note: Negative values (a deficit) indicate a shortfall in firm capacity and/or diversion privileges or available supplies through bulk purchase agreements.

Bureau of Water System and Well Permitting Comments:
The Bulk Purchase contract with Essex Fells Water Department has not recieved approval by BWA. No WME Permits will be issued without a current and effective contract. Firm capacity based on capacities of intercon. is 2.22 mgd; 68.2 mgm and 401.5 mgy.

Bureau of Water Allocation Comments:
Updated up to Sept. 2011. XF

For more information concerning water supply deficit and surplus, please refer to:

- Firm Capacity and Water Allocation Analysis (Pdf Format)
- Currently Effective Water Allocation Permits by County
  This report displays all effective water allocation permits issued by the department.
- Pending Water Allocation Permits with Requests for a Hearing
  All pending water allocation permits with public hearing requests.
- Water Allocation Permits Made Effective within a Selected Timeframe
  This report displays water alloction permits based on a specified date range.

Questions regarding safe demands and firm capacity please contact the Bureau of Water System and Well Permitting at 609-984-6831 or for questions concerning water allocation and status please contact the Bureau of Water Allocation at 609-292-2957.

Questions may also be sent to the Division of Water Supply

back to search results

Glossary of Terms

Allocation Limit: The maximum allowed by a valid Water Allocation Permit issued by the Bureau of Water Allocation. This may be surface or ground water, and may be expressed in MGD, MGM, MGY or some combination thereof. Withdrawals may also be limited by other factors and have seasonal or other

restrictions such as passing flow requirements.

Committed Peak Demand: The demand associated with projects that have been approved for ultimate connection to the system, but are not yet constructed as indicated through the submission of construction certifications or certificates of occupancy. This is calculated by totaling the demand as included in Water Main Extension (WME) permits and the demand associated with projects not requiring a WME permit. For various review purposes this quantity may be represented as MGD, MGM and/or MGY.

Contract Limit: Purchased water, where regulated by an approved service contract, may be included in the overall allocation quantity where appropriate. Contracts may exist with minimum, maximum, seasonal or other restrictions. In some instances, the value is an estimate, not an exact limit.

Current Peak Demand: This is the average day of the highest recorded demand month occurring within the last five (5) years. (For the purpose of this table, the calculation for current peak demand was based on 31 days. Systems will be reviewed on an individual basis.) This includes water from a system's own sources and all other sources of water (i.e. purchased water).

Firm Capacity: Adequate pumping equipment and/or treatment capacity (excluding coagulation, flocculation and sedimentation) to meet peak daily demand, when the largest pumping unit or treatment unit is out of service. The value is represented in MGD.

Firm Capacity Deficit or Surplus = (Firm Capacity - Total Peak Daily Demand): The difference between the Firm Capacity and the sum of the peak daily demand and committed daily demand. This is a measure of the physical ability to provide treated water at adequate pressure when the largest pumping unit or treatment unit is out of service. Negative values indicate a shortfall in Firm Capacity.

Requested Allocation: The amount of water the public water system is requesting as part of its water allocation permit application, including existing allocations. This value is represented in MGM and MGY.

Total Peak Water Demand: The sum of the public water system's current peak demand and committed peak demand. The value is represented in MGD, MGM, and MGY.

Total Available Water Supply: The sum of the Allocation Limit and Contract Limit. This value is represented in MGM and MGY.

Water Supply Deficit or Surplus = (Total Water Allocation Permit Limit- Total Peak Demand): The monthly and/or annual limitations of an Allocation Permit minus the sum of the monthly and/or annual demands recorded based on the water use records plus the monthly and/or annual demand projected for approved but not yet constructed projects. Negative values indicate a shortfall in diversion privileges or available supplies through bulk purchase agreements.

back to top

Public Water System Deficit/Surplus

VERONA WATER DEPARTMENT

PWSID: 0720001
County: Essex

Last Updated: 10/24/12

Glossary of Terms Listed Below

Water Supply Firm Capacity: 2.396 MGD

Available Water Supply Limits

	Allocation	Contract	Total
Monthly Limit	34.600 MGM	65.000 MGM	99.600 MGM
Yearly Limit	365.000 MGY	630.000 MGY	995.000 MGY

Water Demand

	Current Peak	Date	Committed Peak	Total Peak
Daily Demand	2.138 MGD	07/2012	0.214 MGD	2.352 MGD
Monthly Demand	66.288 MGM	07/2012	3.317 MGM	69.605 MGM
Yearly Demand	547.365 MGY	2010	26.037 MGY	573.402 MGY

Water Supply Deficit or Surplus

Firm Capacity	Water Allocation Permit
0.044 MGD	29.995 MGM
	421.598 MGY

Note: Negative values (a deficit) indicate a shortfall in firm capacity and/or diversion privileges or available supplies through bulk purchase agreements.

Bureau of Water System and Well Permitting Comments:
Allocated demand includes the Essex Fells-Hilltop System (PWSID#0706002) supply from the Verona Water Department. Updated up to Sept. 2012.

Bureau of Water Allocation Comments:
no comments provided

For more information concerning water supply deficit and surplus, please refer to:

- Firm Capacity and Water Allocation Analysis (Pdf Format)
- Currently Effective Water Allocation Permits by County
  This report displays all effective water allocation permits issued by the department.
- Pending Water Allocation Permits with Requests for a Hearing
  All pending water allocation permits with public hearing requests.
- Water Allocation Permits Made Effective within a Selected Timeframe
  This report displays water alloction permits based on a specified date range.

Questions regarding safe demands and firm capacity please contact the Bureau of Water System and Well Permitting at 609-984-6831 or for questions concerning water allocation and status please contact the Bureau of Water Allocation at 609-292-2957.

Questions may also be sent to the Division of Water Supply

back to search results

Glossary of Terms

Allocation Limit: The maximum allowed by a valid Water Allocation Permit issued by the Bureau of Water Allocation. This may be surface or ground water, and may be expressed in MGD, MGM, MGY or some combination thereof. Withdrawals may also be limited by other factors and have seasonal or other restrictions such as passing flow requirements.

Committed Peak Demand: The demand associated with projects that have been approved for ultimate connection to the system, but are not yet constructed as indicated through the submission of construction certifications or certificates of occupancy. This is calculated by totaling the demand as included in Water Main Extension (WME) permits and the demand associated with projects not requiring a WME permit. For various review purposes this quantity may be represented as MGD, MGM and/or MGY.

Contract Limit: Purchased water, where regulated by an approved service contract, may be included in the overall allocation quantity where appropriate. Contracts may exist with minimum, maximum, seasonal or other restrictions. In some instances, the value is an estimate, not an exact limit.

Current Peak Demand: This is the average day of the highest recorded demand month occurring within the last five (5) years. (For the purpose of this table, the calculation for current peak demand was based on 31 days. Systems will be reviewed on an individual basis.) This includes water from a system's own sources and all other sources of water (i.e. purchased water).

Firm Capacity: Adequate pumping equipment and/or treatment capacity (excluding coagulation, flocculation and sedimentation) to meet peak daily demand, when the largest pumping unit or treatment unit is out of service. The value is represented in MGD.

Firm Capacity Deficit or Surplus = (Firm Capacity - Total Peak Daily Demand): The difference between the Firm Capacity and the sum of the peak daily demand and committed daily demand. This is a measure of the physical ability to provide treated water at adequate pressure when the largest pumping unit or treatment unit is out of service. Negative values indicate a shortfall in Firm Capacity.

Requested Allocation: The amount of water the public water system is requesting as part of its water allocation permit application, including existing allocations. This value is represented in MGM and MGY.

Total Peak Water Demand: The sum of the public water system's current peak demand and committed peak demand. The value is represented in MGD, MGM, and MGY.

Total Available Water Supply: The sum of the Allocation Limit and Contract Limit. This value is represented in MGM and MGY.

Water Supply Deficit or Surplus = (Total Water Allocation Permit Limit- Total Peak Demand): The monthly and/or annual limitations of an Allocation Permit minus the sum of the monthly and/or annual demands recorded based on the water use records plus the monthly and/or annual demand projected for approved but not yet constructed projects. Negative values indicate a shortfall in diversion privileges or available supplies through bulk purchase agreements.

back to top

Public Water System Deficit/Surplus

WEST CALDWELL TOWNSHIP WATER DEPARTMENT

PWSID: 0721001
County: Essex

Last Updated: 01/07/14

Glossary of Terms Listed Below

Water Supply Firm Capacity: 2.700 MGD

Available Water Supply Limits

	Allocation	Contract	Total
Monthly Limit	N/A MGM	71.300 MGM	71.300 MGM
Yearly Limit	N/A MGY	548.000 MGY	548.000 MGY

Water Demand

	Current Peak	Date	Committed Peak	Total Peak
Daily Demand	1.730 MGD	07/2010	0.186 MGD	1.916 MGD
Monthly Demand	53.628 MGM	07/2010	2.883 MGM	56.511 MGM
Yearly Demand	428.417 MGY	2010	22.630 MGY	451.047 MGY

Water Supply Deficit or Surplus

Firm Capacity	Water Allocation Permit
0.784 MGD	14.789 MGM
	96.953 MGY

Note: Negative values (a deficit) indicate a shortfall in firm capacity and/or diversion privileges or available supplies through bulk purchase agreements.

Bureau of Water System and Well Permitting Comments:
Bulk purchase from Passaic Valley Water Commission (2.7 MGD). Updated up to Sept. 2013.

Bureau of Water Allocation Comments:
no comments provided

For more information concerning water supply deficit and surplus, please refer to:

- Firm Capacity and Water Allocation Analysis (Pdf Format)
- Currently Effective Water Allocation Permits by County
  This report displays all effective water allocation permits issued by the department.
- Pending Water Allocation Permits with Requests for a Hearing
  All pending water allocation permits with public hearing requests.
- Water Allocation Permits Made Effective within a Selected Timeframe
  This report displays water alloction permits based on a specified date range.

Questions regarding safe demands and firm capacity please contact the Bureau of Water System and Well Permitting at 609-984-6831 or for questions concerning water allocation and status please contact the Bureau of Water Allocation at 609-292-2957.

Questions may also be sent to the Division of Water Supply

back to search results

Glossary of Terms

Allocation Limit: The maximum allowed by a valid Water Allocation Permit issued by the Bureau of Water Allocation. This may be surface or ground water, and may be expressed in MGD, MGM, MGY or some combination thereof. Withdrawals may also be limited by other factors and have seasonal or other restrictions such as passing flow requirements.

Committed Peak Demand: The demand associated with projects that have been approved for ultimate connection to the system, but are not yet constructed as indicated through the submission of construction certifications or certificates of occupancy. This is calculated by totaling the demand as included in Water Main Extension (WME) permits and the demand associated with projects not requiring a WME permit. For various review purposes this quantity may be represented as MGD, MGM and/or MGY.

Contract Limit: Purchased water, where regulated by an approved service contract, may be included in the overall allocation quantity where appropriate. Contracts may exist with minimum, maximum, seasonal or other restrictions. In some instances, the value is an estimate, not an exact limit.

Current Peak Demand: This is the average day of the highest recorded demand month occurring within the last five (5) years. (For the purpose of this table, the calculation for current peak demand was based on 31 days. Systems will be reviewed on an individual basis.) This includes water from a system's own sources and all other sources of water (i.e. purchased water).

Firm Capacity: Adequate pumping equipment and/or treatment capacity (excluding coagulation, flocculation and sedimentation) to meet peak daily demand, when the largest pumping unit or treatment unit is out of service. The value is represented in MGD.

Firm Capacity Deficit or Surplus = (Firm Capacity - Total Peak Daily Demand): The difference between the Firm Capacity and the sum of the peak daily demand and committed daily demand. This is a measure of the physical ability to provide treated water at adequate pressure when the largest pumping unit or treatment unit is out of service. Negative values indicate a shortfall in Firm Capacity.

Requested Allocation: The amount of water the public water system is requesting as part of its water allocation permit application, including existing allocations. This value is represented in MGM and MGY.

Total Peak Water Demand: The sum of the public water system's current peak demand and committed peak demand. The value is represented in MGD, MGM, and MGY.

Total Available Water Supply: The sum of the Allocation Limit and Contract Limit. This value is represented in MGM and MGY.

Water Supply Deficit or Surplus = (Total Water Allocation Permit Limit- Total Peak Demand): The monthly and/or annual limitations of an Allocation Permit minus the sum of the monthly and/or annual demands recorded based on the water use records plus the monthly and/or annual demand projected for approved but not yet constructed projects. Negative values indicate a shortfall in diversion privileges or available supplies through bulk purchase agreements.

back to top

Two Bridges SA
NJPDES - 0029386

TOWNSHIP OF FAIRFIELD

Prestige Rubber Mfg Corp
NJPDES - 0086436

BOROUGH OF NORTH CALDWELL

TOWNSHIP OF WEST CALDWELL

BOROUGH OF CALDWELL

Caldwell Boro STP
NJPDES - 0020427

BOROUGH OF ESSEX FELLS

BOROUGH OF ROSELAND

B & G Foods Inc
NJPDES - 0003743

Livingston Twp
NJPDES - 0024511

TOWNSHIP OF LIVINGSTON

TOWNSHIP OF CEDAR GROVE

Servometer Corporation
NJPDES - 0027847

Cedar Grove Twp STP
NJPDES - 0025330

Verona Twp STP
NJPDES - 0024490

TOWNSHIP OF VERONA

TOWNSHIP OF WEST ORANGE

TOWNSHIP OF MONTCLAIR

Grove St Pumping Station
NJPDES - 0156426

Hoffmann-La Roche Inc
NJPDES - 0034185

TOWNSHIP OF NUTLEY

TOWNSHIP OF BLOOMFIELD

BOROUGH OF GLEN RIDGE

TOWNSHIP OF BELLEVILLE

Viacom Incorporated
NJPDES - 0108502

Exxon S/S 3-1014
NJPDES - 0078719

TOWNSHIP OF CITY OF ORANGE

CITY OF EAST ORANGE

City of Orange WTP
NJPDES - 0034592

Exxon S/S 3-2010
NJPDES - 0105619

Branch Brook Park
NJPDES - 0158658

TOWNSHIP OF SOUTH ORANGE VILLAGE

TOWNSHIP OF MILLBURN

TOWNSHIP OF MAPLEWOOD

TOWNSHIP OF IRVINGTON

CITY OF NEWARK

Ardell Industries (ECRA)
NJPDES - 0080071

Alphagary Corporation
NJPDES - 0035807

Newark Refrigerated Whse
NJPDES - 0000329

Passaic Valley Sewerage Commissioners
NJPDES - 0021016

PSEG Conrail Right of Way - Corbin Street
NJPDES - 0194995

Wastewater Service Area
Receiving Facility, NJPDES Permit Number

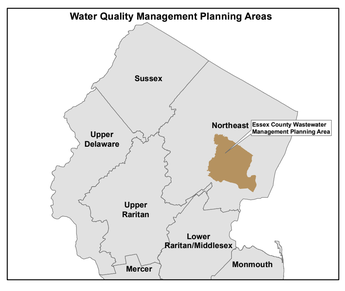
- Caldwell Borough STP, NJ0020427
- Cedar Grove STP, NJ0025330
- Joint Meeting Essex & Union, NJ0024741
- Livingston Township STP, NJ0024511
- PVSC, NJ0021016 *
- Parsippany Troy-Hills WMP, NJ0024970
- Two Bridges SA, NJ0029386
- Verona STP, NJ0024490
- Septic Area**

- Surface Water Discharge
- Combined Sewer Overflow
- Rivers & Streams
- Open Water
- Municipal Boundary
- Wastewater Management Planning Area / County Boundary

* PVSC sewer service area delineated from the adopted PVSC WMP

** Septic areas are to be served by individual subsurface sewage disposal systems with planning flows of 2,000 gallons per day or less (ISSDS)

Water Quality Management Planning Areas



N

0 0.5 1 Miles

MAP 1 - EXISTING WASTEWATER SERVICE AREAS
ESSEX COUNTY, NEW JERSEY

Amending the Following Areawide Water Quality Management Plan: Northeast

Submitted by the County of Essex as Wastewater Management Planning Agency
Date of Current Submittal: March 2014
Prepared By: Hatch Mott MacDonald

"Locations of future pump stations, major interceptors, and trunk sewers are being provided for general information only and will not serve as the basis for any future consistency determinations or permit reviews unless the pump station, major interceptor or trunk sewer is part of a State or federally funded project."

"Pursuant to N.J.A.C. 7:15, Riparian zones are: 300 feet from top of bank (or centerline of a first order stream where no bank is apparent) for waters designated as Category One and all upstream tributaries within the same HUC 14; 150 feet for waters designated Trout Production and all upstream waters; 150 feet for water designated Trout Maintenance and all upstream waters within one linear mile as measured along the length of the regulated water; 150 feet for any segments of water flowing though an area that contains documented habitat for a threatened or endangered species of plant or animal, which is critically dependent on the surface water body for survival, and all upstream waters (including tributaries) within one linear mile as measured along the length of the surface water body; 150 feet for waters that run through acid-producing soils, and; 50 feet for all waters not designated as C1, trout waters, critically water dependent Threatened and/or Endangered Species Habitat, or associated with acid soils.
Surface waters that are designated Category One are listed in the Surface Water Quality Standards at N.J.A.C. 7:9B. The Department's "Surface Water Quality Standards" GIS data layer was utilized to determine these waters. The applicable 300 foot buffer has been applied to these waterways and removed from the proposed sewer service areas on the mapping. Lesser width buffers have not been graphically removed from the sewer service area but are not proposed for sewer service. Jurisdictional determinations by the Department will be utilized to determine the extent of the sewer service area on individual lots.

"All existing, new, or expanded industrial pretreatment facilities requiring Significant Indirect User (SIU) permits and/or Treatment Works Approvals, and which are located within the specified sewer service area, are deemed to be consistent."

"Pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas, are unaffected by adoption of this document and compliance is required."

"Development in areas mapped as wetlands, flood prone areas, suitable habitat for endangered and threatened species as identified on the Department's Landscape Maps of Habitat for Endangered, Threatened and Other Priority Wildlife as Rank 3, 4 and 5, Natural Heritage Priority Sites, riparian zones, steep slopes, or designated river areas may be subject to special regulation under Federal or State statutes or rules, and interested persons should check with the Department for the latest information. Any depiction of environmental features shall be for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules"
"Areas located within the watershed of a Freshwater One (FW1) stream, as classified in the Surface Water Quality Standards, and/or that have Class 1-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water area based on the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6". Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions including, but not limited to, the following: 1) DEP will not approve any pollutant discharge to ground water nor approve any human activity which results in a degradation of natural quality except for the upgrade or continued operation of existing facilities serving existing development. For additional information please see the Surface Water Quality Standards at N.J.A.C. 7:9-6."

This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

Document Path: P:\257961\GIS\ZMXD\PlatteMap_1_ExistingSewerServiceArea.mxd 11/11/2014 8:53:28 AM

MAP 2 - SANITARY SEWER INFRASTRUCTURE

Amending the Following Areawide Water Quality Management Plan: Northeast

Submitted by the County of Essex as Wastewater Management Planning Agency
Date of Current Submittal: March 2014
Prepared By: Hatch Mott MacDonald

"Locations of future pump stations, major interceptors, and trunk sewers are being provided for general information only and will not serve as the basis for any future consistency determinations or permit reviews unless the pump station, major interceptor or trunk sewer is part of a State or federally funded project."

"Pursuant to N.J.A.C. 7:15, Riparian zones are: 300 feet from top of bank (or centerline of a first order stream where no bank is apparent) for waters designated as Category One and all upstream tributaries within the same HUC 14; 150 feet for waters designated Trout Production and all upstream waters; 150 feet for water designated Trout Maintenance and all upstream waters within one linear mile as measured along the length of the regulated water; 150 feet for any segments of water flowing though an area that contains documented habitat for a threatened or endangered species of plant or animal, which is critically dependent on the surface water body for survival, and all upstream waters (including tributaries) within one linear mile as measured along the length of the surface water body; 150 feet for waters that run through acid-producing soils, and; 50 feet for all waters not designated as C1, trout waters, critically water dependent Threatened and/or Endangered Species Habitat, or associated with acid soils.
Surface waters that are designated Category One are listed in the Surface Water Quality Standards at N.J.A.C. 7:9B. The Department's "Surface Water Quality Standards" GIS data layer was utilized to determine these waters. The applicable 300 foot buffer has been applied to these waterways and removed from the proposed sewer service areas on the mapping. Lesser width buffers have not been graphically removed from the sewer service area but are not proposed for sewer service. Jurisdictional determinations by the Department will be utilized to determine the extent of the sewer service area on individual lots.

"All existing, new, or expanded industrial pretreatment facilities requiring Significant Indirect User (SUI) permits and/or Treatment Works Approvals, and which are located within the specified sewer service area, are deemed to be consistent."

"Pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas, are unaffected by adoption of this document and compliance is required."

"Development in areas mapped as wetlands, flood prone areas, suitable habitat for endangered and threatened species as identified on the Department's Landscape Maps of Habitat for Endangered, Threatened and Other Priority Wildlife as Rank 3, 4, and 5, Natural Heritage Priority Sites, riparian zones, steep slopes, or designated river areas may be subject to special regulation under Federal or State statutes or rules, and interested persons should check with the Department for the latest information. Any depiction of environmental features shall be for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules".
"Areas located within the entire area of a Freshwater One (FW1) designation, as specified in the Surface Water Quality Standards, and/or that have Class 1-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water area based on the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6". Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions including, but not limited to, the following: 1) DEP will not approve any pollutant discharge to ground water nor approve any human activity which results in a degradation of natural quality except for the upgrade or continued operation of existing facilities serving existing development. For additional information please see the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6."

This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

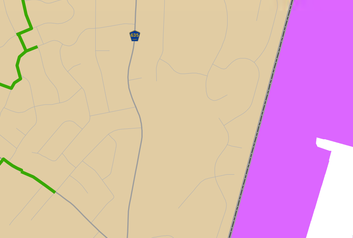
Wastewater Service Area
Receiving Facility, NJPDES Permit Number
- Caldwell Borough STP, NJ0020427
- Cedar Grove STP, NJ0025330
- Joint Meeting Essex & Union, NJ0024741
- Livingston Township STP, NJ0024511
- PVSC, NJ0021016 *
- Parsippany Troy-Hills WMP, NJ0024970
- Two Bridges SA, NJ0029386
- Verona STP, NJ0024490
- Septic Area**

- WTP Treatment Plant
- P Pump Station
- Force Main
- Interceptor Gravity Sewer
- Municipal Boundary
- Wastewater Management Planning Area / County Boundary

* See PVSC and/or Joint Meeting WMP for detail about areas outside of shown extent.

** Septic areas are to be served by individual subsurface sewage disposal systems with planning flows of 2,000 gallons per day or less (ISSDS)

Water Quality Management Planning Areas



0 0.25 0.5 Miles

Document Path: P:\25795\GIS\2MXD\Plates\Map_2_SanitarySewerInfrastructure.mxd 3/4/2014 7:46:51 AM

MAP 3 - POTABLE WATER PURVEYOR SERVICE AREAS

Amending the Following Areawide Water Quality Management Plan: Northeast

Submitted by the County of Essex as Wastewater Management Planning Agency
Date of Current Submittal: March 2014
Prepared By: Hatch Mott MacDonald

"Locations of future pump stations, major interceptors, and trunk sewers are being provided for general information only and will not serve as the basis for any future consistency determinations or permit reviews unless the pump station, major interceptor or trunk sewer is part of a State or federally funded project."

"Pursuant to N.J.A.C. 7:15, Riparian zones are: 300 feet from top of bank (or centerline of a first order stream where no bank is apparent) for waters designated as Category One and all upstream tributaries within the same HUC 14; 150 feet for waters designated Trout Production and all upstream waters; 150 feet for water designated Trout Maintenance and all upstream waters within one linear mile as measured along the length of the regulated water; 150 feet for any segments of water flowing though an area that contains documented habitat for a threatened or endangered species of plant or animal, which is critically dependent on the surface water body for survival, and all upstream waters (including tributaries) within one linear mile as measured along the length of the surface water body; 150 feet for waters that run through acid-producing soils, and; 50 feet for all waters not designated as C1, trout waters, critically water dependent Threatened and/or Endangered Species Habitat, or associated with acid soils.
Surface waters that are designated Category One are listed in the Surface Water Quality Standards at N.J.A.C. 7:9B. The Department's "Surface Water Quality Standards" GIS data layer was utilized to determine these waters. The applicable 300 foot buffer has been applied to these waterways and removed from the proposed sewer service areas on the mapping. Lesser width buffers have not been graphically removed from the sewer service area but are not proposed for sewer service. Jurisdictional determinations by the Department will be utilized to determine the extent of the sewer service area on individual lots.

"All existing, new, or expanded industrial pretreatment facilities requiring Significant Indirect User (SIU) permits and/or Treatment Works Approvals, and which are located within the specified sewer service area, are deemed to be consistent."

"Pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas, are unaffected by adoption of this document and compliance is required."

"Development in areas mapped as wetlands, flood prone areas, suitable habitat for endangered and threatened species as identified on the Department's Landscape Maps of Habitat for Endangered, Threatened and Other Priority Wildlife as Rank 3, 4, and 5, Natural Heritage Priority Sites, riparian zones, steep slopes, or designated river areas may be subject to special regulation under Federal or State statutes or rules, and interested persons should check with the Department for the latest information. Any depiction of environmental features shall be for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules"
"Areas located within the watershed of a Freshwater One (FW1) stream, as classified in the Surface Water Quality Standards, and/or that have Class 1-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water area based on the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6". Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions including, but not limited to, the following: 1) DEP will not approve any pollutant discharge to ground water nor approve any human activity which results in a degradation of natural quality except for the upgrade or continued operation of existing facilities serving existing development. For additional information please see the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6."

This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

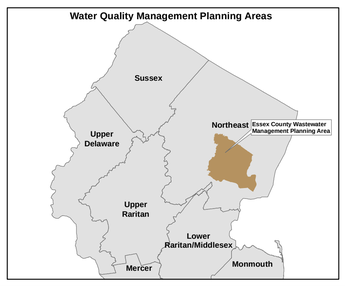
Potable Water Purveyor Service Area

Purveyor
- Caldwell Water Department
- Cedar Grove Water Department
- City of East Orange Water Department
- City of Newark Water Department
- Essex Fells Water Department
- Fairfield Borough Water Department
- Glen Ridge Water Department
- Livingston Twp Water Department
- Montclair Water Department
- NJ American Water
- North Caldwell Water Department
- Orange City Water Department
- Roseland Water Department
- Verona Water Department
- Village of South Orange Water Department
- West Caldwell Water Department

- Rivers & Streams
- Open Water
- Municipal Boundary
- Wastewater Management Planning Area / County Boundary

* See PVSC and/or Joint Meeting WMP for detail about areas outside of shown extent.

Water Quality Management Planning Areas



0 0.25 0.5 Miles

Document Path: P:\2378\01\GIS\MXD\PotableMap_3_WaterSupply.mxd 3/4/2014 7:47:03 AM

MAP 4 - SURFACE WATER QUALITY STANDARDS, RIPARIAN BUFFERS AND WATERSHEDS
ESSEX COUNTY, NEW JERSEY

Amending the Following Areawide Water Quality Management Plan: Northeast

Submitted by the County of Essex as Wastewater Management Planning Agency

Date of Current Submittal: March 2014

Prepared By: Hatch Mott MacDonald

"Locations of future pump stations, major interceptors, and trunk sewers are being provided for general information only and will not serve as the basis for any future consistency determinations or permit reviews unless the pump station, major interceptor or trunk sewer is part of a State or federally funded project."

"Pursuant to N.J.A.C. 7:15, Riparian zones are: 300 feet from top of bank (or centerline of a first order stream where no bank is apparent) for waters designated as Category One and all upstream tributaries within the same HUC 14; 150 feet for waters designated Trout Production and all upstream waters; 150 feet for water designated Trout Maintenance and all upstream waters within one linear mile as measured along the length of the regulated water; 150 feet for any segments of water flowing though an area that contains documented habitat for a threatened or endangered species of plant or animal, which is critically dependent on the surface water body for survival, and all upstream waters (including tributaries) within one linear mile as measured along the length of the surface water body; 150 feet for waters that run through acid-producing soils, and; 50 feet for all waters not designated as C1, trout waters, critically water dependent Threatened and/or Endangered Species Habitat, or associated with acid soils.
Surface waters that are designated Category One are listed in the Surface Water Quality Standards at N.J.A.C. 7:9B. The Department's "Surface Water Quality Standards" GIS data layer was utilized to determine these waters. The applicable 300 foot buffer has been applied to these waterways and removed from the proposed sewer service areas on the mapping. Lesser width buffers have not been graphically removed from the sewer service area but are not proposed for sewer service. Jurisdictional determinations by the Department will be utilized to determine the extent of the sewer service area on individual lots.

"All existing, new, or expanded industrial pretreatment facilities requiring Significant Indirect User (SIU) permits and/or Treatment Works Approvals, and which are located within the specified sewer service area, are deemed to be consistent."

"Pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas, are unaffected by adoption of this document and compliance is required."

"Development in areas mapped as wetlands, flood prone areas, suitable habitat for endangered and threatened species as identified on the Department's Landscape Maps of Habitat for Endangered, Threatened and Other Priority Wildlife as Rank 3, 4, and 5, Natural Heritage Priority Sites, riparian zones, steep slopes, or designated river areas may be subject to special regulation under Federal or State statutes or rules, and interested persons should check with the Department for the latest information. Any depiction of environmental features shall be for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules"
"Areas located within the watershed of a Freshwater One (FW1) stream, as classified in the Surface Water Quality Standards, and/or that have Class 1-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water area based on the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6". Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions including, but not limited to, the following: 1) DEP will not approve any pollutant discharge to ground water nor approve any human activity which results in a degradation of natural quality except for the upgrade or continued operation of existing facilities serving existing development. For additional information please see the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6."

This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

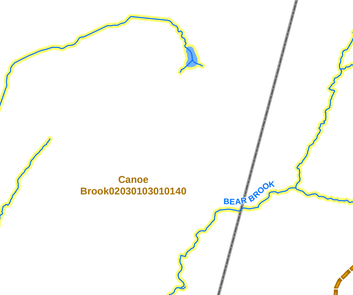
Surface Water Quality Standards
- FW2-NT
- FW2-NT/SE2
- FW2-NTC1
- SE3
- Open Water
- Riparian Buffer
- HUC11 Watershed Boundary
- HUC14 Watershed Boundary

- Municipal Boundary
- Wastewater Management Planning Area / County Boundary

* See PVSC and/or Joint Meeting WMP for detail about areas outside of shown extent.

** Septic areas are to be served by individual subsurface sewage disposal systems with planning flows of 2,000 gallons per day or less (ISSDS)

Water Quality Management Planning Areas



0 0.25 0.5 Miles

Document Path: P:\2079\01\GIS\MXD\Plates\Map_4_SurfaceWaterRiparianBuffer.mxd 3/4/2014 7:48:04 AM

TOWNSHIP OF FAIRFIELD
BOROUGH OF NORTH CALDWELL
TOWNSHIP OF CEDAR GROVE
TOWNSHIP OF WEST CALDWELL
BOROUGH OF CALDWELL
TOWNSHIP OF VERONA
BOROUGH OF ESSEX FELLS
TOWNSHIP OF MONTCLAIR
BOROUGH OF ROSELAND
TOWNSHIP OF LIVINGSTON
TOWNSHIP OF WEST ORANGE
BOROUGH OF GLEN RIDGE
TOWNSHIP OF CITY OF ORANGE
CITY OF EAST ORANGE
TOWNSHIP OF SOUTH ORANGE VILLAGE
TOWNSHIP OF MAPLEWOOD
CITY OF NEWARK
TOWNSHIP OF MILLBURN

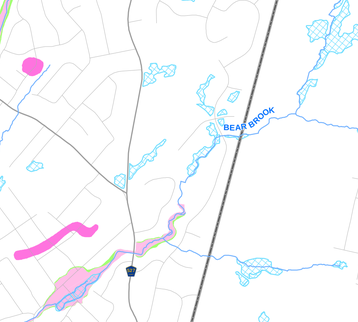
PASSAIC RIVER
HATFIELD BROOK
ROCKAWAY RIVER
WHIPPANY RIVER
DEEPAVAAL BROOK
PINE BROOK
ROBERTSONS BRANCH
FOUR ERTORS BRANCH NORTH
WILLOW BROOK
CANOE BROOK
BEAR BROOK
CUB BROOK
LANGE BROOK
SLOUGH BROOK
TAYLOR BROOK
BLACK CAT BROOK
HANCKAMOCKSINBROOK
PASSAIC RIVER
PECKMAN RIVER
DOWNING BROOK
GREAT NOTCH BROOK
GREEN BROOK
TAYLOR BROOK
WEST BRANCH RAHWAY RIVER
HIGHLAND BROOK
NORTH BRANCH WIGWAM BROOK
WIGWAM BROOK
TURTLE BROOK
EAST BRANCH RAHWAY RIVER
PEARL BROOK
SECOND RIVER

Rivers & Streams
Open Water
Wetlands
FEMA DFIRM Flood Zone
A
AE
AO
0.2 % Annual Chance
Municipal Boundary
Wastewater Management Planning Area / County Boundary

* See PVSC and/or Joint Meeting WMP for detail about areas outside of shown extent.

** Septic areas are to be served by individual subsurface sewage disposal systems with planning flows of 2,000 gallons per day or less (ISSDS)

Water Quality Management Planning Areas



0 0.25 0.5 Miles

MAP 5 - WETLANDS & FLOOD PRONE AREAS
ESSEX COUNTY, NEW JERSEY

Amending the Following Areawide Water Quality Management Plan: Northeast

Submitted by the County of Essex as Wastewater Management Planning Agency
Date of Current Submittal: March 2014
Prepared By: Hatch Mott MacDonald

"Locations of future pump stations, major interceptors, and trunk sewers are being provided for general information only and will not serve as the basis for any future consistency determinations or permit reviews unless the pump station, major interceptor or trunk sewer is part of a State or federally funded project."

"Pursuant to N.J.A.C. 7:15, Riparian zones are: 300 feet from top of bank (or centerline of a first order stream where no bank is apparent) for waters designated as Category One and all upstream tributaries within the same HUC 14; 150 feet for waters designated Trout Production and all upstream waters; 150 feet for water designated Trout Maintenance and all upstream waters within one linear mile as measured along the length of the regulated water; 150 feet for any segments of water flowing though an area that contains documented habitat for a threatened or endangered species of plant or animal, which is critically dependent on the surface water body for survival, and all upstream waters (including tributaries) within one linear mile as measured along the length of the surface water body; 150 feet for waters that run through acid-producing soils, and; 50 feet for all waters not designated as C1, trout waters, critically water dependent Threatened and/or Endangered Species Habitat, or associated with acid soils.
Surface waters that are designated Category One are listed in the Surface Water Quality Standards at N.J.A.C. 7:9B. The Department's "Surface Water Quality Standards" GIS data layer was utilized to determine these waters. The applicable 300 foot buffer has been applied to these waterways and removed from the proposed sewer service areas on the mapping. Lesser width buffers have not been graphically removed from the sewer service area but are not proposed for sewer service. Jurisdictional determinations by the Department will be utilized to determine the extent of the sewer service area on individual lots.

"All existing, new, or expanded industrial pretreatment facilities requiring Significant Indirect User (SIU) permits and/or Treatment Works Approvals, and which are located within the specified sewer service area, are deemed to be consistent."

"Pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas, are unaffected by adoption of this document and compliance is required."

"Development in areas mapped as wetlands, flood prone areas, suitable habitat for endangered and threatened species as identified on the Department's Landscape Maps of Habitat for Endangered, Threatened and Other Priority Wildlife as Rank 3, 4, and 5, Natural Heritage Priority Sites, riparian zones, steep slopes, or designated river areas may be subject to special regulation under Federal or State statutes or rules, and interested persons should check with the Department for the latest information. Any depiction of environmental features shall be for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules"
"Areas located within the watershed of a Freshwater One (FW1) stream, as classified in the Surface Water Quality Standards, and/or that have Class 1-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water area based on the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6". Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions including, but not limited to, the following: 1) DEP will not approve any pollutant discharge to ground water nor approve any human activity which results in a degradation of natural quality except for the upgrade or continued operation of existing facilities serving existing development. For additional information please see the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6."

This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

Document Path: P:\257961\GIS\ZMXD\PlatesMap_5_WetlandsFloodPronAreas.mxd 3/4/2014 7:47:36 AM

MAP 6 - PUBLIC OPEN SPACE & PRESERVED LANDS
ESSEX COUNTY, NEW JERSEY

Amending the Following Areawide Water Quality Management Plan: Northeast

Submitted by the County of Essex as Wastewater Management Planning Agency
Date of Current Submittal: March 2014
Prepared By: Hatch Mott MacDonald

"Locations of future pump stations, major interceptors, and trunk sewers are being provided for general information only and will not serve as the basis for any future consistency determinations or permit reviews unless the pump station, major interceptor or trunk sewer is part of a State or federally funded project."

"Pursuant to N.J.A.C. 7:15, Riparian zones are: 300 feet from top of bank (or centerline of a first order stream where no bank is apparent) for waters designated as Category One and all upstream tributaries within the same HUC 14; 150 feet for waters designated Trout Production and all upstream waters; 150 feet for water designated Trout Maintenance and all upstream waters within one linear mile as measured along the length of the regulated water; 150 feet for any segments of water flowing though an area that contains documented habitat for a threatened and endangered species of plant or animal, which is critically dependent on the surface water body for survival, and all upstream waters (including tributaries) within one linear mile as measured along the length of the surface water body; 150 feet for waters that run through acid-producing soils, and; 50 feet for all waters not designated as C1, trout waters, critically water dependent Threatened and/or Endangered Species Habitat, or associated with acid soils.
Surface waters that are designated Category One are listed in the Surface Water Quality Standards at N.J.A.C. 7:9B. The Department's "Surface Water Quality Standards" GIS data layer was utilized to determine these waters. The applicable 300 foot buffer has been applied to these waterways and removed from the proposed sewer service areas on the mapping. Lesser width buffers have not been graphically removed from the sewer service area but are not proposed for sewer service. Jurisdictional determinations by the Department will be utilized to determine the extent of the sewer service area on individual lots.

"All existing, new, or expanded industrial pretreatment facilities requiring Significant Indirect User (SIU) permits and/or Treatment Works Approvals, and which are located within the specified sewer service area, are deemed to be consistent."

"Pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas, are unaffected by adoption of this document and compliance is required."

"Development in areas mapped as wetlands, flood prone areas, suitable habitat for endangered and threatened species as identified on the Department's Landscape Maps of Habitat for Endangered, Threatened and Other Priority Wildlife as Rank 3, 4, and 5, Natural Heritage Priority Sites, riparian zones, steep slopes, or designated river areas may be subject to special regulation under Federal or State statutes or rules, and interested persons should check with the Department for the latest information. Any depiction of environmental features shall be for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules"
"Areas located within the watershed of a Freshwater One (FW1) stream, as classified in the Surface Water Quality Standards, and/or that have Class 1-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water area based on the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6". Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions including, but not limited to, the following: 1) DEP will not approve any pollutant discharge to ground water nor approve any human activity which results in a degradation of natural quality except for the upgrade or continued operation of existing facilities serving existing development. For additional information please see the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6."

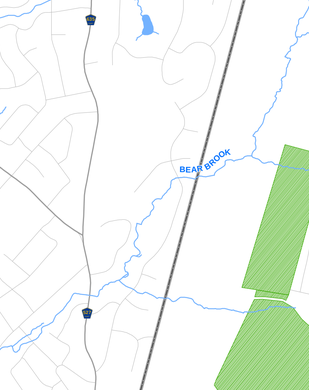
This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

Rivers & Streams
Open Water
Municipal Boundary
Public Open Space and Preserved Lands
Wastewater Management Planning Area / County Boundary

* See PVSC and/or Joint Meeting WMP for detail about areas outside of shown extent.

** Septic areas are to be served by individual subsurface sewage disposal systems with planning flows of 2,000 gallons per day or less (ISSDS)

Water Quality Management Planning Areas



N

0 0.25 0.5 Miles

Document Path: P:\257961\GIS\MXD\Plates\Map_6_OpenSpaces.mxd 3/4/2014 7:48:21 AM

Great Piece Meadows

Passaic Meadows Macrosite

Troy Meadows

TOWNSHIP OF FAIRFIELD

TOWNSHIP OF WEST CALDWELL

BOROUGH OF NORTH CALDWELL

BOROUGH OF CALDWELL

BOROUGH OF ESSEX FELLS

TOWNSHIP OF VERONA

TOWNSHIP OF CEDAR GROVE

TOWNSHIP OF MONTCLAIR

BOROUGH OF ROSELAND

TOWNSHIP OF LIVINGSTON

TOWNSHIP OF WEST ORANGE

BOROUGH OF GLEN RIDGE

TOWNSHIP OF CITY OF ORANGE

CITY OF EAST ORANGE

TOWNSHIP OF SOUTH ORANGE VILLAGE

CITY OF NEWARK

TOWNSHIP OF MAPLEWOOD

TOWNSHIP OF MILLBURN

PASSAIC RIVER

ROCKAWAY RIVER

WANAQUE RIVER

PEQUANNOCK RIVER

PECKMAN RIVER

RAMAPO RIVER

WEST BRANCH RAHWAY RIVER

EAST BRANCH RAHWAY RIVER

HATFIELD BROOK

DEEPAVAAL BROOK

GREEN BROOK

PEARL BROOK

DOWNING BROOK

GREAT NOTCH BROOK

PAINE BROOK

FOUR BRIDGES BRANCH

FOULERTONS BRANCH NORTH

FOULERTONS BRANCH

TAYLOR BROOK

WILLOW BROOK

CANOE BROOK

BEAR BROOK

CUB BROOK

CANOE BROOK

SLOUGH BROOK

BLACK CAT BROOK

TURTLE BROOK

NISHUANE BROOK

NORTH BRANCH WIGWAM BROOK

WIGWAM BROOK

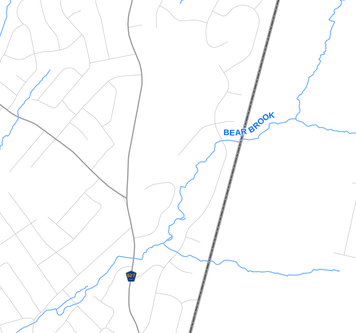
SECOND RIVER

Species Critical Habitat
- State Threatened
- State Endangered
- Federally Listed
- Natural Heritage Priority Sites
- Rivers & Streams
- Open Water
- Municipal Boundary
- Wastewater Management Planning Area / County Boundary

* See PVSC and/or Joint Meeting WMP for detail about areas outside of shown extent.

** Septic areas are to be served by individual subsurface sewage disposal systems with planning flows of 2,000 gallons per day or less (ISSDS)

Water Quality Management Planning Areas



N

0 0.25 0.5 Miles

MAP 7 - T & E SPECIES CRITICAL HABITAT AND NATURAL HERITAGE PRIORITY SITES

Amending the Following Areawide Water Quality Management Plan: Northeast

Submitted by the County of Essex as Wastewater Management Planning Agency
Date of Current Submittal: March 2014
Prepared By: Hatch Mott MacDonald

"Locations of future pump stations, major interceptors, and trunk sewers are being provided for general information only and will not serve as the basis for any future consistency determinations or permit reviews unless the pump station, major interceptor or trunk sewer is part of a State or federally funded project."

"Pursuant to N.J.A.C. 7:15, Riparian zones are: 300 feet from top of bank (or centerline of a first order stream where no bank is apparent) for waters designated as Category One and all upstream tributaries within the same HUC 14; 150 feet for waters designated Trout Production and all upstream waters; 150 feet for water designated Trout Maintenance and all upstream waters within one linear mile as measured along the length of the regulated water; 150 feet for any segments of water flowing though an area that contains documented habitat for a threatened or endangered species of plant or animal, which is critically dependent on the surface water body for survival, and all upstream waters (including tributaries) within one linear mile as measured along the length of the surface water body; 150 feet for waters that run through acid-producing soils, and; 50 feet for all waters not designated as C1, trout waters, critically water dependent Threatened and/or Endangered Species Habitat, or associated with acid soils.
Surface waters that are designated Category One are listed in the Surface Water Quality Standards at N.J.A.C. 7:9B. The Department's "Surface Water Quality Standards" GIS data layer was utilized to determine these waters. The applicable 300 foot buffer has been applied to these waterways and removed from the proposed sewer service areas on the mapping. Lesser width buffers have not been graphically removed from the sewer service area but are not proposed for sewer service. Jurisdictional determinations by the Department will be utilized to determine the extent of the sewer service area on individual lots.

"All existing, new, or expanded industrial pretreatment facilities requiring Significant Indirect User (SIU) permits and/or Treatment Works Approvals, and which are located within the specified sewer service area, are deemed to be consistent."

"Pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas, are unaffected by adoption of this document and compliance is required."

"Development in areas mapped as wetlands, flood prone areas, suitable habitat for endangered and threatened species as identified on the Department's Landscape Maps of Habitat for Endangered, Threatened and Other Priority Wildlife as Rank 3, 4, and 5, Natural Heritage Priority Sites, riparian zones, steep slopes, or designated river areas may be subject to special regulation under Federal or State statutes or rules, and interested persons should check with the Department for the latest information. Any depiction of environmental features shall be for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules"
"Areas located within the watershed of a Freshwater One (FW1) stream, as classified in the Surface Water Quality Standards, and/or that have Class 1-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water area based on the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6". Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions including, but not limited to, the following: 1) DEP will not approve any pollutant discharge to ground water nor approve any human activity which results in a degradation of natural quality except for the upgrade or continued operation of existing facilities serving existing development. For additional information please see the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6."

This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

Document Path: P:\25796\GIS\2MXD\Plates\Map_7_HabitatNaturalHeritageSites.mxd 3/4/2014 7:48:42 AM

MAP 8 - STEEP SLOPES

Amending the Following Areawide Water Quality Management Plan: Northeast

Submitted by the County of Essex as Wastewater Management Planning Agency

Date of Current Submittal: March 2014

Prepared By: Hatch Mott MacDonald

"Locations of future pump stations, major interceptors, and trunk sewers are being provided for general information only and will not serve as the basis for any future consistency determinations or permit reviews unless the pump station, major interceptor or trunk sewer is part of a State or federally funded project."

"Pursuant to N.J.A.C. 7:15, Riparian zones are: 300 feet from top of bank (or centerline of a first order stream where no bank is apparent) for waters designated as Category One and all upstream tributaries within the same HUC 14; 150 feet for waters designated Trout Production and all upstream waters; 150 feet for water designated Trout Maintenance and all upstream waters within one linear mile as measured along the length of the regulated water; 150 feet for any segments of water flowing though an area that contains documented habitat for a threatened or endangered species of plant or animal, which is critically dependent on the surface water body for survival, and all upstream waters (including tributaries) within one linear mile as measured along the length of the surface water body; 150 feet for waters that run through acid-producing soils, and; 50 feet for all waters not designated as C1, trout waters, critically water dependent Threatened and/or Endangered Species Habitat, or associated with acid soils.
Surface waters that are designated Category One are listed in the Surface Water Quality Standards at N.J.A.C. 7:9B. The Department's "Surface Water Quality Standards" GIS data layer was utilized to determine these waters. The applicable 300 foot buffer has been applied to these waterways and removed from the proposed sewer service areas on the mapping. Lesser width buffers have not been graphically removed from the sewer service area but are not proposed for sewer service. Jurisdictional determinations by the Department will be utilized to determine the extent of the sewer service area on individual lots.

"All existing, new, or expanded industrial pretreatment facilities requiring Significant Indirect User (SIU) permits and/or Treatment Works Approvals, and which are located within the specified sewer service area, are deemed to be consistent."

"Pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas, are unaffected by adoption of this document and compliance is required."

"Development in areas mapped as wetlands, flood prone areas, suitable habitat for endangered and threatened species as identified on the Department's Landscape Maps of Habitat for Endangered, Threatened and Other Priority Wildlife as Rank 3, 4 and 5, Natural Heritage Priority Sites, riparian zones, steep slopes, or designated river areas may be subject to special regulation under Federal or State statutes or rules, and interested persons should check with the Department for the latest information. Any depiction of environmental features shall be for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules"
"Areas located within the watershed of a Freshwater One (FW1) stream, as classified in the Surface Water Quality Standards, and/or that have Class 1-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water area based on the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6". Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions including, but not limited to, the following: 1) DEP will not approve any pollutant discharge to ground water nor approve any human activity which results in a degradation of natural quality except for the upgrade or continued operation of existing facilities serving existing development. For additional information please see the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6."

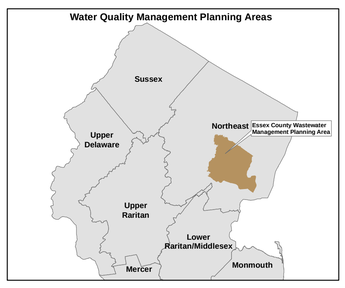
This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

Steep Slopes
Rivers & Streams
Open Water
Municipal Boundary
Wastewater Management Planning Area / County Boundary

* See PVSC and/or Joint Meeting WMP for detail about areas outside of shown extent.

** Septic areas are to be served by individual subsurface sewage disposal systems with planning flows of 2,000 gallons per day or less (ISSDS)

Water Quality Management Planning Areas



0 0.25 0.5 Miles

Document Path: P:\25795\1\GIS\2.MXD\Plates\Map_8_SteepSlopes.mxd 3/4/2014 7:48:55 AM

MAP 9 - ENVIRONMENTALLY SENSITIVE AREAS

Amending the Following Areawide Water Quality Management Plan: Northeast

Submitted by the County of Essex as Wastewater Management Planning Agency

Date of Current Submittal: March 2014

Prepared By: Hatch Mott MacDonald

"Locations of future pump stations, major interceptors, and trunk sewers are being provided for general information only and will not serve as the basis for any future consistency determinations or permit reviews unless the pump station, major interceptor or trunk sewer is part of a State or federally funded project."

"Pursuant to N.J.A.C. 7:15, Riparian zones are: 300 feet from top of bank (or centerline of a first order stream where no bank is apparent) for waters designated as Category One and all upstream tributaries within the same HUC 14; 150 feet for waters designated Trout Production and all upstream waters; 150 feet for water designated Trout Maintenance and all upstream waters within one linear mile as measured along the length of the regulated water; 150 feet for any segments of water flowing though an area that contains documented habitat for a threatened or endangered species of plant or animal, which is critically dependent on the surface water body for survival, and all upstream waters (including tributaries) within one linear mile as measured along the length of the surface water body; 150 feet for waters that run through acid-producing soils, and; 50 feet for all waters not designated as C1, trout waters, critically water dependent Threatened and/or Endangered Species Habitat, or associated with acid soils.
Surface waters that are designated Category One are listed in the Surface Water Quality Standards at N.J.A.C. 7:9B. The Department's "Surface Water Quality Standards" GIS data layer was utilized to determine these waters. The applicable 300 foot buffer has been applied to these waterways and removed from the proposed sewer service areas on the mapping. Lesser width buffers have not been graphically removed from the sewer service area but are not proposed for sewer service. Jurisdictional determinations by the Department will be utilized to determine the extent of the sewer service area on individual lots.

"All existing, new, or expanded industrial pretreatment facilities requiring Significant Indirect User (SIU) permits and/or Treatment Works Approvals, and which are located within the specified sewer service area, are deemed to be consistent."

"Pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas, are unaffected by adoption of this document and compliance is required."

"Development in areas mapped as wetlands, flood prone areas, suitable habitat for endangered and threatened species as identified on the Department's Landscape Maps of Habitat for Endangered, Threatened and Other Priority Wildlife as Rank 3, 4, and 5, Natural Heritage Priority Sites, riparian zones, steep slopes, or designated river areas may be subject to special regulation under Federal or State statutes or rules, and interested persons should check with the Department for the latest information. Any depiction of environmental features shall be for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules"
"Areas located within the watershed of a Freshwater One (FW1) stream, as classified in the Surface Water Quality Standards, and/or that have Class 1-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water area based on the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6". Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions including, but not limited to, the following: 1) DEP will not approve any pollutant discharge to ground water nor approve any human activity which results in a degradation of natural quality except for the upgrade or continued operation of existing facilities serving existing development. For additional information please see the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6."

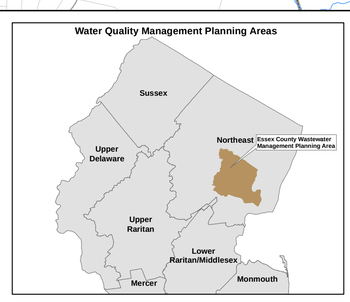
This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

Environmentally Sensitive Areas
Rivers & Streams
Open Water
Municipal Boundary
Wastewater Management Planning Area / County Boundary

* See PVSC and/or Joint Meeting WMP for detail about areas outside of shown extent.

** Septic areas are to be served by individual subsurface sewage disposal systems with planning flows of 2,000 gallons per day or less (ISSDS)

Water Quality Management Planning Areas



N

0 0.25 0.5 Miles

Document Path: P:\23796\1\GIS2\MXD\Plates\Map_9_EnvironmentallySensitiveAreas.mxd 3/4/2014 7:49:06 AM

TOWNSHIP OF FAIRFIELD

BOROUGH OF NORTH CALDWELL

TOWNSHIP OF CEDAR GROVE

TOWNSHIP OF WEST CALDWELL

BOROUGH OF CALDWELL

TOWNSHIP OF VERONA

BOROUGH OF ESSEX FELLS

TOWNSHIP OF MONTCLAIR

BOROUGH OF ROSELAND

TOWNSHIP OF WEST ORANGE

BOROUGH OF GLEN RIDGE

TOWNSHIP OF LIVINGSTON

TOWNSHIP OF CITY OF ORANGE

CITY OF EAST ORANGE

TOWNSHIP OF SOUTH ORANGE VILLAGE

TOWNSHIP OF MAPLEWOOD

CITY OF NEWARK

TOWNSHIP OF MILLBURN

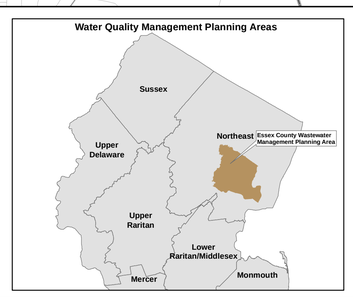
Generalized Zoning

- Low Density Residential
- Medium Density Residential
- High Density Residential
- Residential (Unclassified)
- Mixed Use
- Commercial
- Commercial/Industrial
- Light Industrial / Industrial
- Government/Institutional
- Open Space
- Conservation/Limited Development
- Open Water
- Municipal Boundary
- Wastewater Management Planning Area / County Boundary

* See PVSC and/or Joint Meeting WMP for detail about areas outside of shown extent.

** Septic areas are to be served by individual subsurface sewage disposal systems with planning flows of 2,000 gallons per day or less (ISSDS)

Water Quality Management Planning Areas



0 0.25 0.5 Miles

MAP 10 - GENERALIZED ZONING

Amending the Following Areawide Water Quality Management Plan: Northeast

Submitted by the County of Essex as Wastewater Management Planning Agency
Date of Current Submittal: March 2014
Prepared By: Hatch Mott MacDonald

"Locations of future pump stations, major interceptors, and trunk sewers are being provided for general information only and will not serve as the basis for any future consistency determinations or permit reviews unless the pump station, major interceptor or trunk sewer is part of a State or federally funded project."

"Pursuant to N.J.A.C. 7:15, Riparian zones are: 300 feet from top of bank (or centerline of a first order stream where no bank is apparent) for waters designated as Category One and all upstream tributaries within the same HUC 14; 150 feet for waters designated Trout Production and all upstream waters; 150 feet for water designated Trout Maintenance and all upstream waters within one linear mile as measured along the length of the regulated water; 150 feet for any segments of water flowing though an area that contains documented habitat for a threatened or endangered species of plant or animal, which is critically dependent on the surface water body for survival, and all upstream waters (including tributaries) within one linear mile as measured along the length of the surface water body; 150 feet for waters that run through acid-producing soils, and; 50 feet for all waters not designated as C1, trout waters, critically water dependent Threatened and/or Endangered Species Habitat, or associated with acid soils.
Surface waters that are designated Category One are listed in the Surface Water Quality Standards at N.J.A.C. 7:9B. The Department's "Surface Water Quality Standards" GIS data layer was utilized to determine these waters. The applicable 300 foot buffer has been applied to these waterways and removed from the proposed sewer service areas on the mapping. Lesser width buffers have not been graphically removed from the sewer service area but are not proposed for sewer service. Jurisdictional determinations by the Department will be utilized to determine the extent of the sewer service area on individual lots.

"All existing, new, or expanded industrial pretreatment facilities requiring Significant Indirect User (SIU) permits and/or Treatment Works Approvals, and which are located within the specified sewer service area, are deemed to be consistent."

"Pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas, are unaffected by adoption of this document and compliance is required."

"Development in areas mapped as wetlands, flood prone areas, suitable habitat for endangered and threatened species as identified on the Department's Landscape Maps of Habitat for Endangered, Threatened and Other Priority Wildlife as Rank 3, 4, and 5, Natural Heritage Priority Sites, riparian zones, steep slopes, or designated river areas may be subject to special regulation under Federal or State statutes or rules, and interested persons should check with the Department for the latest information. Any depiction of environmental features shall be for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules"
"Areas located within the watershed of a Freshwater One (FW1) stream, as classified in the Surface Water Quality Standards, and/or that have Class 1-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water area based on the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6". Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions including, but not limited to, the following: 1) DEP will not approve any pollutant discharge to ground water nor approve any human activity which results in a degradation of natural quality except for the upgrade or continued operation of existing facilities serving existing development. For additional information please see the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6."

This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

Document Path: P:\25796\GIS\2MXD\Plates\Map_10_Zoning.mxd 3/4/2014 7:48:20 AM

Two Bridges SA
NJPDES - 0029386

Cedar Grove Twp STP
NJPDES - 0025330

Verona Twp STP
NJPDES - 0024490

Caldwell Boro STP
NJPDES - 0020427

Livingston Twp
NJPDES - 0024511

Passaic Valley Sewerage Commissioners
NJPDES - 0021016

TOWNSHIP OF FAIRFIELD
BOROUGH OF NORTH CALDWELL
TOWNSHIP OF CEDAR GROVE
TOWNSHIP OF WEST CALDWELL
BOROUGH OF CALDWELL
TOWNSHIP OF VERONA
BOROUGH OF ESSEX FELLS
BOROUGH OF ROSELAND
TOWNSHIP OF MONTCLAIR
TOWNSHIP OF NUTLEY
TOWNSHIP OF BLOOMFIELD
BOROUGH OF GLEN RIDGE
TOWNSHIP OF BELLEVILLE
TOWNSHIP OF LIVINGSTON
TOWNSHIP OF WEST ORANGE
TOWNSHIP OF CITY OF ORANGE
CITY OF EAST ORANGE
TOWNSHIP OF SOUTH ORANGE VILLAGE
TOWNSHIP OF MILLBURN
TOWNSHIP OF MAPLEWOOD
TOWNSHIP OF IRVINGTON
CITY OF NEWARK

Wastewater Service Area
Receiving Facility, NJPDES Permit Number

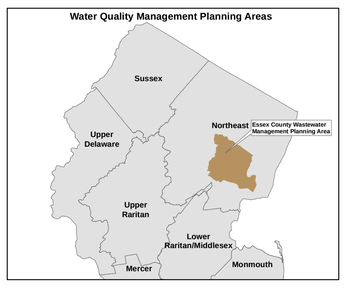
- Caldwell Borough STP, NJ0020427
- Cedar Grove STP, NJ0025330
- Joint Meeting Essex & Union, NJ0024741
- Livingston Township STP, NJ0024511
- PVSC, NJ0021016 *
- Parsippany Troy-Hills WMP, NJ0024970
- Two Bridges SA, NJ0029386
- Verona STP, NJ0024490
- Septic Area**

- Surface Water Discharge
- Combined Sewer Overflow
- Rivers & Streams
- Open Water
- Municipal Boundary
- Wastewater Management Planning Area / County Boundary

* PVSC sewer service area delineated from the adopted PVSC WMP

** Septic areas are to be served by individual subsurface sewage disposal systems with planning flows of 2,000 gallons per day or less (ISSDS)

Water Quality Management Planning Areas



N
0 0.5 1 Miles

MAP 11 - PROPOSED WASTEWATER SERVICE AREAS
ESSEX COUNTY, NEW JERSEY

Amending the Following Areawide Water Quality Management Plan: Northeast

Submitted by the County of Essex as Wastewater Management Planning Agency
Date of Current Submittal: March 2014
Prepared By: Hatch Mott MacDonald

"Locations of future pump stations, major interceptors, and trunk sewers are being provided for general information only and will not serve as the basis for any future consistency determinations or permit reviews unless the pump station, major interceptor or trunk sewer is part of a State or federally funded project."

"Pursuant to N.J.A.C. 7:15, Riparian zones are: 300 feet from top of bank (or centerline of a first order stream where no bank is apparent) for waters designated as Category One and all upstream tributaries within the same HUC 14; 150 feet for waters designated Trout Production and all upstream waters; 150 feet for water designated Trout Maintenance and all upstream waters within one linear mile as measured along the length of the regulated water; 150 feet for any segments of water flowing though an area that contains documented habitat for a threatened or endangered species of plant or animal, which is critically dependent on the surface water body for survival, and all upstream waters (including tributaries) within one linear mile as measured along the length of the surface water body; 150 feet for waters that run through acid-producing soils, and; 50 feet for all waters not designated as C1, trout waters, critically water dependent Threatened and/or Endangered Species Habitat, or associated with acid soils.
Surface waters that are designated Category One are listed in the Surface Water Quality Standards at N.J.A.C. 7:9B. The Department's "Surface Water Quality Standards" GIS data layer was utilized to determine these waters. The applicable 300 foot buffer has been applied to these waterways and removed from the proposed sewer service areas on the mapping. Lesser width buffers have not been graphically removed from the sewer service area but are not proposed for sewer service. Jurisdictional determinations by the Department will be utilized to determine the extent of the sewer service area on individual lots.

"All existing, new, or expanded industrial pretreatment facilities requiring Significant Indirect User (SIU) permits and/or Treatment Works Approvals, and which are located within the specified sewer service area, are deemed to be consistent."

"Pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas, are unaffected by adoption of this document and compliance is required."

"Development in areas mapped as wetlands, flood prone areas, suitable habitat for endangered and threatened species as identified on the Department's Landscape Maps of Habitat for Endangered, Threatened and Other Priority Wildlife as Rank 3, 4 and 5, Natural Heritage Priority Sites, riparian zones, steep slopes, or designated river areas may be subject to special regulation under Federal or State statutes or rules, and interested persons should check with the Department for the latest information. Any depiction of environmental features shall be for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules"
"Areas located within the watershed of a Freshwater One (FW1) stream, as classified in the Surface Water Quality Standards, and/or that have Class 1-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water area based on the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6". Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions including, but not limited to, the following: 1) DEP will not approve any pollutant discharge to ground water nor approve any human activity which results in a degradation of natural quality except for the upgrade or continued operation of existing facilities serving existing development. For additional information please see the Surface Water Quality Standards at N.J.A.C. 7:9-6."

This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

Document Path: P:\257961\GIS\MXD\Plates\Map_11_FutureSewerServiceArea.mxd 3/4/2014 7:49:31 AM