

## RECOMMENDATIONS

The recommendations in this report are offered on the basis of experience, observations of field conditions, interviews, and influencing factors described herein.

### A. General

1. All existing areas served by public sewer service should remain designated as they are presently designated on the Wastewater Management Plan of Hopewell Township, unless otherwise recommended herein.
2. Where possible, the boundaries of sewer service areas should terminate along physical features such as roadway centerlines, along restricted open spaces, or conservation easements. Physical features provide the clearest definition of boundary limits and restricted open spaces and conservation easements can be well defined by markings. These limits do not change often, and if they change, the change requires some form of public consideration/hearing.
3. All areas that are the subject of new planning that result in development densities in excess of current zoning ordinances for single family lots with wells and septic systems, should be considered for public sewer service. In areas other than designated ELSA or SBRSA service areas, public sewer service could be provided by a Board of Public Utilities regulated Utility, operating under a Franchise Agreement with the Hopewell Township Committee. Wastewater franchise areas are public sewer service areas and must be designated on the Wastewater Management Plan.

## **B. Delaware River Watershed**

1. The settlement agreement between Hopewell Township and the Ewing Lawrence Sewerage Authority ("settlement agreement"), was made on January 19, 2000 and filed with the court Feb. 9, 2000. Paragraph 10 states:

"Further ELSA service for any additional areas of Hopewell will be provided by ELSA and Ewing only by agreement among ELSA, Ewing and Hopewell and only to the extent agreed upon. Hopewell agrees to forthwith amend its Wastewater Management Plan and any other plans, permits, applications, etc. that are necessary to remove all areas of Hopewell Township, other than those subject to existing agreements referenced in Paragraph 6, from ELSA's service area. Hopewell agrees that ELSA/Ewing has no present obligation to provide sewer services to any area of Hopewell Township including but not limited to the Titusville and the Washington Crossing areas and that hereafter it will not apply for or support any application for sewer service from ELSA for areas within Hopewell Township without ELSA/Ewing's agreement."

In order to honor this agreement, Hopewell Township is obligated to remove all ELSA sewer service areas that do not presently have contractual capacity within the ELSA Wastewater Treatment Facility. The areas of change required by this settlement are identified in red on Exhibit 4.

2. In order to comply with the settlement agreement it is recommended the area of Titusville be deleted from the ELSA sewer service area. Alternative systems should be considered as individual on-lot solutions to specific problems in the Titusville area. If an area-wide wastewater issue arises, then that specific problem should be reviewed and the feasibility of a solution for that specific problem be determined at that time. The settlement agreement requires the removal of the Titusville area from a sewer service area.



Many sections of Titusville are comprised of densities and soil characteristics that are similar in nature to other areas of Hopewell Township where sewer service has previously been considered. Documentation of these conditions dates back into early 1970's wastewater planning documents.

The physical characteristics and anecdotal evidence for Titusville suggest that public sewers should be considered. However, the cost of infrastructure to support the Titusville area would not be feasible.

3. It is recommended the ELSA sewer service area that presently exists between Ewing Township, New Jersey State Highway Route 31, Mercer County Route 546 and Lawrence Township remain a designated ELSA sewer service area. This sewer service area includes the Areas of Concern known as Brandon Road, Brandon Road East, Orchard Avenue, Pennington-Lawrenceville Road East, and Pennington Road on the east side of Route 31. There is also a limited number of lots fronting upon and located on the west side of Route 31 just north of Interstate 95 and south of Diverty Road that should also remain designated as ELSA sewer service area.

The area described is part of the existing ELSA sewer service area. There is no strong evidence that indicates there are significant septic failures in this area. There is no evidence that indicates a proliferation of septic failures in this area.

This area is comprised primarily of residential lots but includes a limited number of existing non-residential lots. There are a limited number of commercially zoned properties along Route 31 which have environmental constraints which limit their ultimate development potential. Additionally,

there are properties owned by the College of New Jersey, a public agency that may be provided sewer service.

These existing lots may or may not benefit from alternative septic system technology. These lots will, however, be deprived of the benefit of a public sewer solution they currently enjoy if they were to be eliminated from the existing ELSA service area in which they are located.

Public water is required if public sewers are constructed in these areas in order to mitigate potential groundwater table impacts:

Orchard Avenue, Brandon Road, Pennington Road, Lehigh Town Center<sup>10</sup>, Pennington-Lawrenceville Road East

*These five proposed sewer service areas are combined because of their proximity, lack of local option as indicated by Van Cleef Engineering in their April 27, 2001 report, and because the water demands of each exceed the dependable yields and recharge rates.....However, in all of these areas, unless public water is provided in lieu of groundwater from the underlying aquifer systems, continued groundwater withdrawals to meet water-supply demands will very likely result in adverse impacts to the aquifer systems. (M<sup>2</sup> Associates, Inc.,p25)*

The physical infrastructure required to provide both public water and public sewer exists within close proximity to these areas.

4. The Areas of Concern known as Diverty Road and Indian Village should remain designated for public sewers discharging into the ELSA system. These area are presently designated for public sewer service discharging to ELSA.

Physical observations of surface water runoff, high water table conditions, and physical features of both Diverty Road and Indian Village support the

---

<sup>10</sup> Lehigh Town Center was required to connect to public sewer and public water and is an existing development.

need for public sewers in these areas. Interviews with the Hopewell Township Health Officer and septic system contractors who have worked in this area offer concurrence with this opinion. More intense management of septic systems or use of alternative septic system technologies does not appear viable for these areas due to the limiting soil constraints.

Both areas are located partly within the Delaware River and partly within the Millstone/Raritan River watersheds. Both areas are currently designated as ELSA public sewer service areas and both areas were the subject of prior considerations and approvals by the NJDEP and Delaware River Basin Commission for watershed transfers, permitting them to be located within the ELSA sewer service area.

Groundwater impacts under all conditions are expected with public sewer installation in Diverty Road and under drought conditions for Indian Village. Both developments, therefore, will require public water as stated by M<sup>2</sup> Associates, Inc. in its report:

#### Diverty Road

*The dependable yield and recharge volumes of the Passaic Formation aquifer system beneath this area are exceeded by the existing water-supply demands of these homes. Installation of sewers would very likely result in adverse impacts to the aquifer system during most years and especially during drought. If the sewers are connected to the regional ELSA system, water levels are likely to decline within the aquifer and inter-related surface water. If the regional option is selected, provision of public water to eliminate local groundwater withdrawals is very likely necessary to reduce the potential for adverse impacts to the groundwater system. (p25)*

## Indian Village

*The demands of Indian Village exceed the volume of water recharging the aquifer during a drought.....If this area is connected to the ELSA facility, provision of public water would very likely be required to minimize the potential for adverse impacts to the aquifer system and inter-related surface-water systems. Furthermore, public water may be necessary if the current septic-system operations have adversely impacted groundwater quality. (p26)*

Diversity Road is located within the franchise area of Trenton Water. Indian Village is not located within the franchise area of Trenton Water and an amendment to the franchise agreement to include Indian Village will be required to provide public water service to this area. Public water mains exist in close proximity to both areas.

5. It is recommended that the Area of Concern known as the Ingleside area remain designated for individual on-site septic systems, with one exception. The portion of this area adjacent to the Pennington Circle on NJSH Route 31, Exhibit 5, should receive public sewers discharging to the ELSA system. This recommendation is conditioned upon Hopewell Township providing the ability to use alternative technologies as a means of septic repair. If the use of alternative technologies is not permitted, this Area of Concern should be considered, in its entirety, for public sewers.

The Ingleside area is not presently considered a public sewer service area. It was designated as a public sewer service area with discharge to the City of Trenton in the 1998 Wastewater Management Plan, however, the cancellation of the contract with the City of Trenton eliminated this designation.

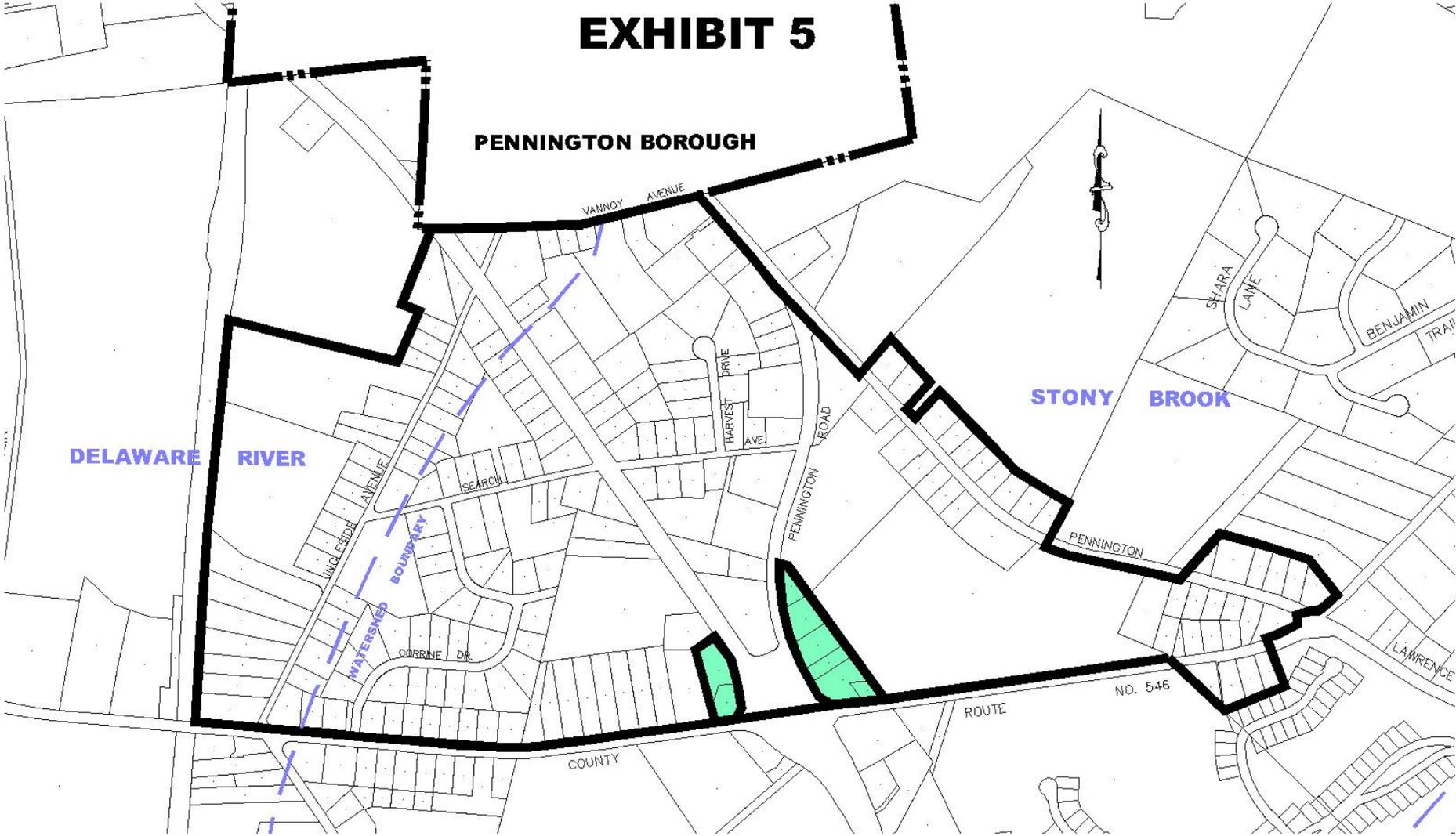
The Ingleside area is predominantly underlain by Bucks soils. This soil formation is considered one of the better soil formations in Hopewell

# INGLESIDE RECOMMENDED PUBLIC SEWER SERVICE AREAS

DATED: NOVEMBER 2004

SCALE: 1" = 600'±

## EXHIBIT 5



Township. Alternative technologies for septic repairs may offer relief from the objectionable results that occur with conventional soil replacement septic system technologies. The Pennington Circle area is predominantly a non-residential area served by individual on-site septic systems and wells. The underlying soils of this area are different than the majority of those found in the remainder of the Ingleside area. This has contributed to the septic problems that have plagued this part of the Ingleside area for years. Attempts to manage the negative consequences created by these septic problems have occurred, however, these attempts have not been successful. Local waterways and ground water tables are suffering the consequences of these failing septic systems. It is recommended that the lots highlighted in green on Exhibit 5 receive public sewer service with discharge to ELSA.

Ingleside is partially located within the Delaware River Watershed but the majority is located within the Raritan River (SBRSA) Watershed. This entire Area of Concern was the subject of prior considerations and approvals by the NJDEP and Delaware River Basin Commission for watershed transfers from the SBRSA watershed to the ELSA watershed.

Because of its location within the Millstone/Raritan River watershed, a wastewater system serving Ingleside should discharge into the SBRSA facilities. Connection to the SBRSA facilities would require a long circuitous route around the southern and eastern perimeter of Pennington Borough through environmentally sensitive corridors. The construction costs of the SBRSA routing will be high, resulting in a low cost-benefit ratio.

Unlike other Areas of Concern, there is no scientific evidence to indicate that providing public sewers to this area would result in an environmental

degradation (ground water depletion) that could have long lasting effects. In its 2003 report, M<sup>2</sup> Associates, Inc. states:

Ingleside

*Provided that water-supply demands do not increase, the sewers are unlikely to result in adverse impacts to the underlying aquifer system since groundwater recharge during drought and normal years exceed demands. (p23)*

Additionally, Pennington Borough has indicated that it is not interested in extending any utility services beyond its corporate boundaries. Given Pennington Borough's stated position, its approval for sewer service for the Ingleside Area, or lack thereof, would affect the ultimate approval required by SBRSA.

**C. MILLSTONE/RARITAN WATERSHED**

1. It is recommended that the Areas of Concern known as Morningside, Penn View Heights and Timberlane remain designated for individual on-site septic systems. This recommendation is conditioned upon Hopewell Township providing the ability to use alternative technologies as a means of septic repair. These areas are not presently designated as public sewer service areas.

These areas are existing developed areas comprised primarily of residential lots. These areas are not currently located within a sewer service area. There is some anecdotal evidence that a proliferation of septic failures in this area exists. However, there is also contradicting evidence that suggests there is not a proliferation of failures. There is an absence of scientific evidence that supports the cost-benefit ratio associated with public sewer construction in this area. Alternative technologies for septic repairs may offer relief from the objectionable

results that occur with conventional soil replacement septic system technologies.

The costs of public sewer construction, or when combined with the costs of water main construction approaches and, in some instances far exceeds the cost of septic system repairs or septic system replacement. Lots with functioning septic systems<sup>11</sup> will be reluctant to voluntarily support the large expenditure to connect to a public sewer system. Mandating connections may be required to support the system financing. Such a mandate would impose a financial hardship that might otherwise be avoided on an as-needed basis with alternative technologies.

M<sup>2</sup> Associates, Inc. concluded that impacts associated from the construction of public sewers would result in impacts to groundwater in the Morningside and Penn View Heights areas during drought conditions and that there are no anticipated impacts in the Timberlane area:

#### Morningside

*The dependable yield of the Passaic Formation aquifer system beneath this area is exceeded by the existing water-supply demands of these homes. Installation of sewers should not result in adverse impacts to the aquifer system during most years but is likely during drought since demands exceed drought recharge. Connection to the regional SBRSA system would most likely result in aquifer water levels declining during drought with possible slow recovery during 22 subsequent years of normal precipitation. Given the small difference between demands and normal year recharge for this area, provision of public water to eliminate local groundwater withdrawals would further reduce the potential for adverse impacts. (p21)*

#### Penn View Heights

*The dependable yield of the Passaic Formation aquifer system beneath this area is exceeded by the existing water supply demands. Installation of sewers should not result in adverse impacts to the aquifer system during*

---

<sup>11</sup> New septic systems exist in each Area of Concern.

*most years but are very likely during drought since demands exceed drought recharge. Even during most years, there is little groundwater recharge in reserve beneath this proposed sewer service area after water is withdrawn to meet demands and therefore, the potential exists for adverse impacts resulting from lowered water levels. (p23)*

### Timberlane

*While the dependable yield of the aquifer beneath this proposed sewer service area is exceeded by the water-supply demands, installation of sewers within this area is unlikely to result in adverse impacts to the aquifer system since these demands are less than recharge during drought and years of normal precipitation. However, there is little margin of safety between the volume of water recharging the aquifer and the daily demands during drought and therefore, monitoring of water levels and reduction in demands early in a drought may be warranted. (p22)*

Pennington Borough has indicated that it is not interested in extending any utility services beyond its corporate boundaries. Due to the location within the Millstone/Raritan River watershed, any public sewer system serving the Areas of Concern known as Morningside, Penn View Heights, and Timberlane should discharge into the SBRSA facilities serving Pennington Borough. In order to effect this connection, sewer infrastructure would have to follow a long circuitous route around the northern and eastern perimeter of Pennington Borough, and the environmentally sensitive corridor along Stony Brook. Given Pennington Borough's stated position, its approval for sewer service for the Ingleside Area, or lack thereof, would affect the ultimate approval required by SBRSA.

Original consideration for public sewer service to the Morningside Areas of Concern was in direct response to a petition filed with the Hopewell Township Committee during the Trenton Sewer proposal. Testimony at that time, suggested the petition was based upon existing groundwater contamination in the area. This area is underlain by a water table that has been contaminated and, although it is only indirectly related to the

topic of wastewater, it is recommended this area be considered for public water service<sup>12</sup>.

2. The Area of Concern known as Tree Streets should remain as a designated SBRSA public sewer service area. This area is presently designated as an SBRSA public sewer service area.

Pennington Borough has indicated that it is not interested in extending any utility services beyond its corporate boundaries. Due to its location within the Millstone/Raritan River watershed, any public sewer system serving this Area of Concern should discharge into the SBRSA facilities serving Pennington Borough. In order to effect this connection, sewer infrastructure would have to follow a long circuitous route around the eastern perimeter of Pennington Borough, and the environmentally sensitive corridor along Stony Brook and its tributaries.

The M<sup>2</sup> Associates, Inc. evaluation for groundwater impacts indicates that public sewer installation in the Tree Streets area will not require the installation of public water:

#### Tree Streets

*Since this proposed sewer service area appears fully built out, it is unlikely that demands will increase and therefore, the installation of sewers is unlikely to result in adverse impacts to the aquifer system. Interconnection of this proposed sewer service area to the SBRSA system is unlikely to result in adverse lowering of water levels within the aquifer system. (p24)*

As public water is not required, the infrastructure costs remain as stated in the April 2001 Van Cleef Engineering Associates report. Based upon this report, the cost to provide public sewers to this Area of Concern may

---

<sup>12</sup> In 1989 an application was made to bring in Trenton Water to this area but the application was never approved by NJDEP.

exceed the cost of septic system repairs. Additionally, connecting lots with functioning septic systems to a public sewer system, or connecting lots where significant expenditure has already occurred to construct new mounded septic systems, will not be voluntary. A mandate for such connections might be required to support the public sewer system construction financing. This hardship might be avoided by encouraging the use of alternative septic system technologies on an as-needed basis.

This Area of Concern is located within an existing public sewer service area, it is recommended there be no change in the designation status. Conditions could change that will make public sewers an affordable alternative. However, until such time, individual on-lot septic systems should remain as the primary means for wastewater disposal in this Area of Concern.

3. It is recommended the Area of Concern known as North Main Street receive public sewers.

North Main Street is an area that is primarily zoned non-residential and over 50% of its land area is comprised of lands owned by the Borough of Pennington. This area is not presently designated as a public sewer service area. The Borough of Pennington has presented plans for the development of public facilities on its property and has stated that those facilities will require public sewer service. The remainder of the land is developed with commercial structures. There is one residential dwelling located on a small lot adjacent to a Category I waterway as defined by NJDEP.

Category I waterways are a significant environmental resource. Public sewers to this small area would eliminate any potential source of non-point source pollution.

Public water supply is not required to support public sewers in this area:

North Main Street

*The water-supply demands of this proposed sewer service area do not exceed the dependable yield, drought recharge, or normal year recharge. Installation of sewers in this area provided that demands are not increased is unlikely to result in adverse impacts to the underlying aquifer system. (M<sup>2</sup> Associates, Inc., p23)*

Pennington Borough has indicated that it is not interested in extending any utility services beyond its corporate boundaries. Due to its location within the Millstone/Raritan River watershed, any public sewer system serving this Area of Concern should discharge into the SBRSA facilities serving Pennington Borough. In order to effect this connection, sewer infrastructure would have to follow a long circuitous route around the northern perimeter of Pennington Borough, and the environmentally sensitive corridor along Stony Brook and its tributaries. Given Pennington Borough's stated position, its approval for sewer service for the North main Street area, or lack thereof, would affect the ultimate approval required by SBRSA. However, because Pennington Borough is a major land owner in this area, such approval might be possible or, in the alternative, annexation of this area to Pennington Borough might be a consideration if sewer service to this area is deemed necessary.

4. Pennington Point West is an Area of Concern where there is ongoing planning for affordable housing. This area is not presently designated as a public sewer service area. Current zoning anticipates high density housing on this tract. A lawsuit filed by the owner in 2003 sought public sewer service to this tract. This lawsuit ended with Pennington Borough taking a formal position that it will not extend any utilities outside of the Borough boundaries and the Court did not order such extension.

High density development requires some form of public wastewater disposal<sup>13</sup>. If the ultimate density for this area exceeds that permitted by Hopewell Township ordinances for single family lots with wells and septic systems, public sewer service is recommended. In the absence of such planning, this area should remain with wastewater disposal being provided by individual on-site septic systems, as presently exists.

Public sewer service to high density development as permitted by the current ordinances for Pennington Point, also requires the installation of public water:

*Pennington Point*

*The water-supply demands of this planned development will far exceed the dependable yield, drought recharge, and even recharge during years of normal precipitation. Using an onsite well or possibly, a local public water service and the installation of sewers will very likely result in adverse impacts to the aquifer and interrelated surface-water systems. (M<sup>2</sup> Associates, Inc., p22)*

5. The Mount Rose Area of Concern should be designated for public sewer service by SBRSA. This area is not presently designated as a public sewer service area.

This area is a concentration of small lots underlain by geologic and soil formations which severely limit the ability to dispose wastewater on-site. Reconstruction of septic systems serving these lots may not be possible or may require the displacement of designated or potentially historic structures. The use of alternative technologies for septic systems in this area may be quite difficult due to the combination of underlying geologic and soil formations

---

<sup>13</sup> Public sewers discharging to the SBRSA or public sewers discharging to groundwater.

It has been concluded that public sewer construction in this area will impact the groundwater table:

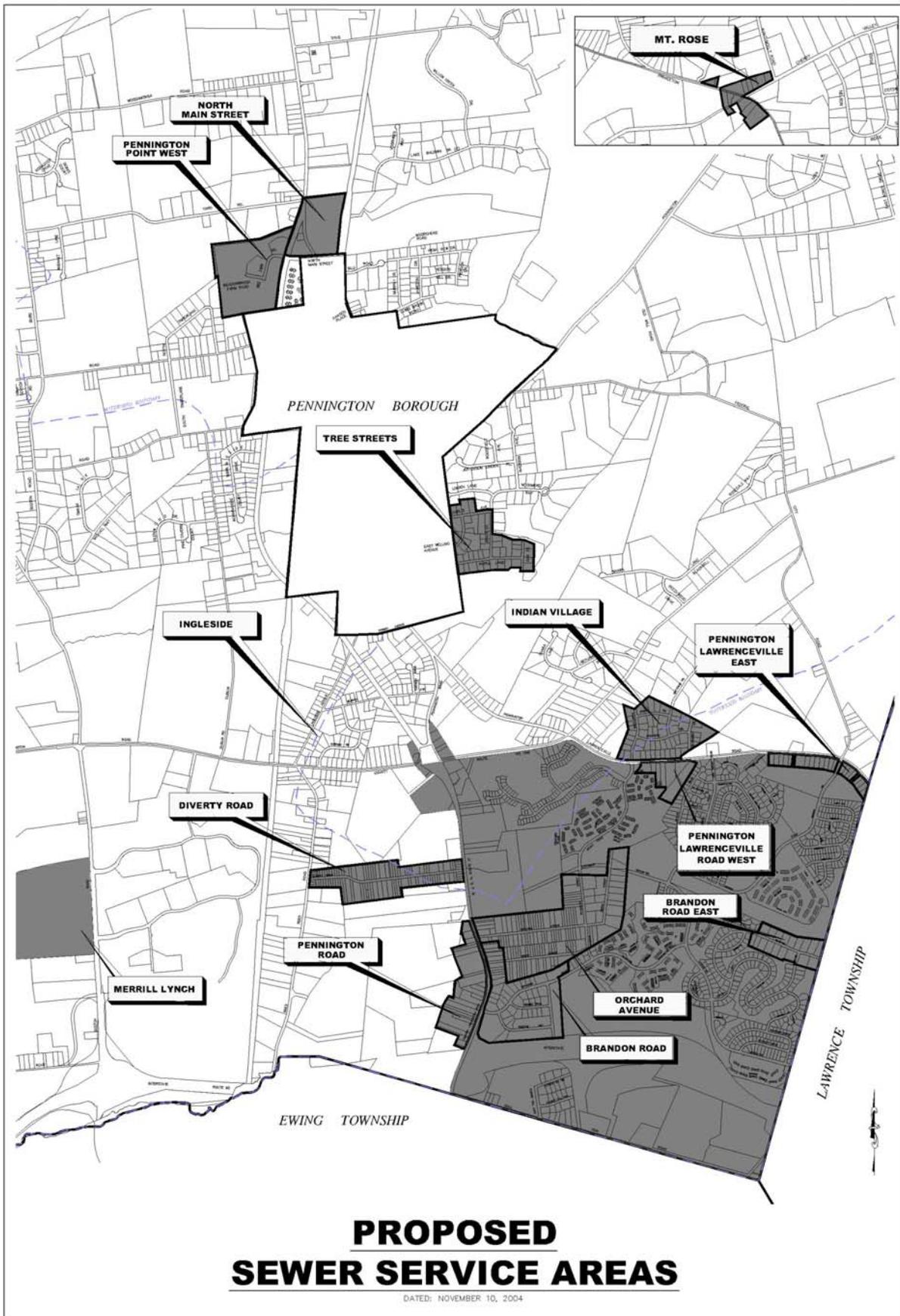
Mt Rose

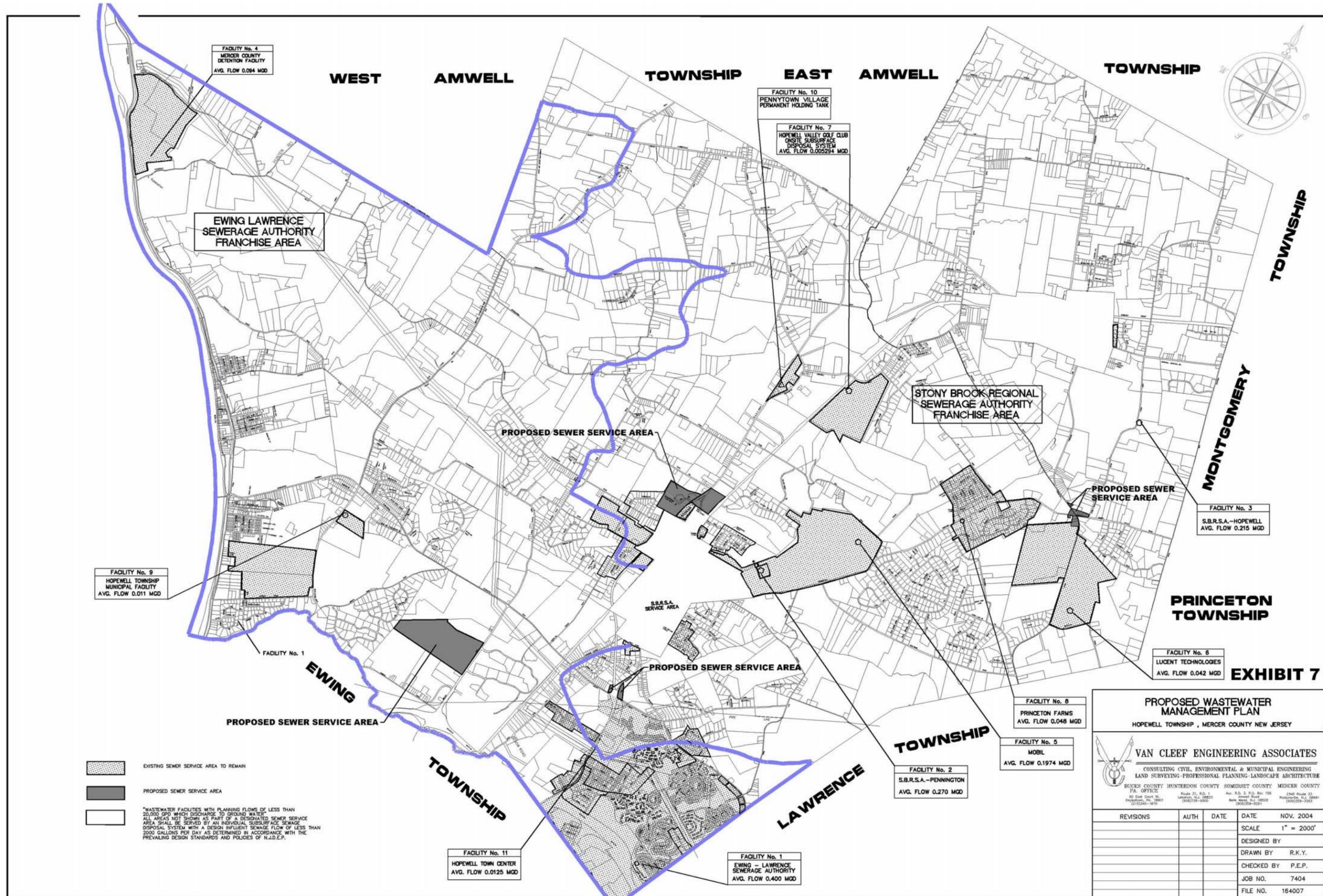
*“...since water-supply demands exceed the dependable yield, drought recharge, and normal year recharge, the installation of sewers is likely to result in the lowering of water levels within the underlying aquifer system. Therefore, if sewers are installed, public water is likely necessary to eliminate or reduce demands on this aquifer system and prevent or reduce potential adverse impacts.” (M<sup>2</sup> Associates, Inc., p24)*

Public water to portions of Mount Rose will be provided by a water main to be constructed in the future as part of a franchise agreement between the Hopewell Township Committee and Elizabethtown Water Company. The lots in Mount Rose are uniquely located along the path of the water main, which is expected to be constructed by others. Connections to this water main can be made directly by the Mount Rose lots without significant cost to the property owner.

Public sewer for Mount Rose should not be considered until public water is available or unless other groundwater recharge measures can be implemented simultaneously due to the groundwater export degradation associated with public sewer installation.

It is recommended that wastewater disposal for any area of Hopewell Township not specifically recommended in this Part III for public sewer service, remain serviced by individual on-site septic systems. Exhibit 6 is a graphical depiction showing the recommendations for the Areas of Concern. Exhibit 7 is a graphical depiction of the Wastewater Management Plan recommended for the entire Hopewell Township.





FACILITY No. 4  
MERCER COUNTY  
DETENTION FACILITY  
AVG. FLOW 0.094 MGD

EWING LAWRENCE  
SEWERAGE AUTHORITY  
FRANCHISE AREA

FACILITY No. 10  
PENNYTOWN VILLAGE  
PERMANENT HOLDING TANK

FACILITY No. 7  
HOPEWELL VALLEY GOLF CLUB  
ON-SITE SUBSURFACE  
DISPOSAL SYSTEM  
AVG. FLOW 0.005294 MGD

STONY BROOK REGIONAL  
SEWERAGE AUTHORITY  
FRANCHISE AREA

FACILITY No. 9  
HOPEWELL TOWNSHIP  
MUNICIPAL FACILITY  
AVG. FLOW 0.011 MGD

FACILITY No. 3  
S.B.R.S.A.-HOPEWELL  
AVG. FLOW 0.215 MGD

FACILITY No. 1

FACILITY No. 6  
LUCENT TECHNOLOGIES  
AVG. FLOW 0.042 MGD

PROPOSED SEWER SERVICE AREA

S.B.R.S.A.  
SERVICE AREA

PROPOSED SEWER SERVICE AREA

FACILITY No. 8  
PRINCETON FARMS  
AVG. FLOW 0.048 MGD

FACILITY No. 5  
MOBIL  
AVG. FLOW 0.1974 MGD

FACILITY No. 2  
S.B.R.S.A.-PENNINGTON  
AVG. FLOW 0.270 MGD

FACILITY No. 11  
HOPEWELL TOWN CENTER  
AVG. FLOW 0.0125 MGD

FACILITY No. 1  
EWING - LAWRENCE  
SEWERAGE AUTHORITY  
AVG. FLOW 0.400 MGD

-  EXISTING SEWER SERVICE AREA TO REMAIN
  -  PROPOSED SEWER SERVICE AREA
- \*WASTEWATER FACILITIES WITH PLANNING FLOWS OF LESS THAN 20,000 GPD WHICH DISCHARGE TO GROUND WATER\*  
ALL AREAS NOT SHOWN AS PART OF A DESIGNATED SEWER SERVICE AREA SHALL BE SERVED BY AN INDIVIDUAL SUBSURFACE SEWAGE DISPOSAL SYSTEM WITH A DESIGN INFLUENT SEWAGE FLOW OF LESS THAN 2000 GALLONS PER DAY AS DETERMINED IN ACCORDANCE WITH THE PREVAILING DESIGN STANDARDS AND POLICIES OF N.J.D.E.P.

**PROPOSED WASTEWATER MANAGEMENT PLAN**  
HOPEWELL TOWNSHIP, MERCER COUNTY NEW JERSEY

**VAN CLEEF ENGINEERING ASSOCIATES**  
CONSULTING CIVIL, ENVIRONMENTAL & MUNICIPAL ENGINEERING  
LAND SURVEYING-PROFESSIONAL PLANNING-LANDSCAPE ARCHITECTURE

BUCKS COUNTY HUNTERDON COUNTY SOMERSET COUNTY MERCER COUNTY  
PA. OFFICE: 30 East Court St., Pottsville, PA 17861 (610)735-5500  
Route 31, R.D. 1, Lansford, N.J. 08833 (908)735-5500  
Ann. R.D. 3, P.O. Box 156, Amwell Road, North West, N.J. 08850 (908)259-3343  
2340 Route 23, Philadelphia, N.J. 19181 (215)261-0291

REVISIONS	AUTH	DATE	DATE	NOV. 2004

SCALE 1" = 2000'  
DESIGNED BY  
DRAWN BY R.K.Y.  
CHECKED BY P.E.P.  
JOB NO. 7404  
FILE NO. 164007