



**ENVIRONMENTAL IMPACT STATEMENT  
PROPOSED WASTEWATER TREATMENT PLANT AND  
DISCHARGES INTO ROBESON CREEK AND THE HAW RIVER**

**TOWN OF PITTSBORO, NC**

SUBMITTED TO:

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Division of Water Quality/ Planning Branch  
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## 2. Proposed Facility (Preferred Alternative: Alternative 3)

The proposed 3.22 MGD WWTP cannot utilize any of the existing process equipment for wastewater treatment due to inappropriate sizing for the proposed flow plus the age of the existing components is beyond their working life (18 to 30 plus years). However, the existing rotary drum thickener may continue to be used plus the equalization basin for sludge storage. A forcemain connection between the new plant and the existing basins will convey the waste sludge.

The forcemain discharge into the Haw River is included in this EIS [See description of Alternative 3 in Section C.1. (3)] but additions to the existing collection system are not. It is worth noting that additional collection systems will be located in private property and funded exclusively by developers with private money. All new collection lines will be designed by, purchased by, and funded by private money. No public money or public land is to be altered.

The new WWTP will be required to meet the nutrient limitations for discharges into the Jordan Lake watershed. In addition, the plant will be capable of producing reuse quality effluent as measured for the effluent standards for BOD<sub>5</sub>, TSS and fecal coliform. Table 3 summarizes the Town of Pittsboro proposed WWTP effluent limitations.

**Table 3. Proposed 3.22-MGD Wastewater Treatment Plant for the Town of Pittsboro: Effluent Discharge Limitations to Jordan Lake**

Parameter	Effluent Standard	
Biochemical Oxygen Demand (BOD <sub>5</sub> )	monthly average	Summer: 5 mg/l Winter: 10 mg/l
	weekly average	Summer: 7.5 mg/l Winter: 15 mg/l
Total Suspended Solids (TSS)	monthly average	5 mg/l
	daily maximum	10 mg/l
Ammonia-Nitrogen (NH <sub>3</sub> -N)	monthly average	Summer: 1.0 mg/l Winter: 2.0 mg/l
	weekly average	Summer: 3.0 mg/l Winter: 6.0 mg/l
Total Phosphorus (TP) delivered to Jordan Lake	3,731 lb/yr	
Total Nitrogen (TN) delivered to Jordan Lake	27,514 lb/yr	
Dissolved Oxygen (DO)	6 mg/l daily average	
Fecal Coliform	14/100 ml monthly average	
	25/100 ml daily maximum	
pH	6-9	
Turbidity	10 NTU	

## F. MITIGATIVE MEASURES

Alternative 3 was selected for being the most feasible (environmentally, technically, and economically) for the Town of Pittsboro. Therefore, this Section F focuses on the mitigative measures for the implementation of the project scope of Alternative 3, which consists of:

The construction of a new tertiary wastewater treatment plant for a permitted capacity of 3.22 MGD reuse-quality effluent with the following discharge locations: (1) continue discharging the current permitted 0.75 MGD flow into Robeson Creek and (2) discharge the balance of the flow ( $3.22 - 0.75 = 2.47$  MGD) into the Haw River at the US-64 bridge. The new WWTP will also provide tertiary quality effluent to the 3M quarry located ~5 miles south of the proposed WWTP site.

The proposed project is not expected to have significant permanent adverse direct impacts on the environment. However, after the moratorium on the approval of major subdivisions and non-residential development is lifted the potential for development of some currently undeveloped lands exists, thereby creating the possibility of some indirect and cumulative impacts which would be mitigated by implementing the Town of Pittsboro and Chatham County policies and ordinances established to regulate growth. Those regulations are summarized below and contained in the Town of Pittsboro and Chatham County LUPs (Exhibits H-2 and H-4).

The Town of Pittsboro will be responsible for mitigation of direct impacts since the project will be entirely constructed within its jurisdiction. For the mitigation of indirect and cumulative impacts, both the Town of Pittsboro and Chatham County hold responsibility for ensuring mitigation because the Town of Pittsboro will serve not only its ETJ and incorporated areas but also areas that will develop southeast of the Town. Those areas are located in the Haw River Township, under Chatham County jurisdiction.

The Town of Pittsboro and Chatham County's natural and cultural resources will be protected and maintained to provide for the future health and welfare of the served area. The proposed project is not expected to have negative long-term direct impacts to topography, land use, water resources, wildlife and their habitats, air quality, or other natural and cultural resources. The proposed project will have beneficial impacts on Robeson Creek flow and water quality and overall nutrient loading to the Haw River and ultimately Jordan Lake.

The Town of Pittsboro and Chatham County have regulations in place to protect the "ruralness" of their jurisdictions. This ensures that both government entities will work together to mitigate indirect and cumulative impacts that this project could cause. For instance, mutual cooperation with its incorporated municipalities (Siler City, Pittsboro, Cary and Goldston) is the #1 Major Recommendation of the County's LUP. Chatham County works synergistically and cooperatively with the Town of Pittsboro and other incorporated towns so that development can be guided towards areas planned for smart development and away from areas with valued environmental or rural qualities.

### ***F.1. Topography and Floodplains***

To prevent or minimize **Direct Impacts** to Topography and Floodplains the Town of Pittsboro will utilize construction managers and inspectors from their selected engineering firm(s) to monitor construction activities and ensure that the mitigation requirements listed below are met.

WWTP: Impacts to topography are limited to the footprint of the plant. Proper grading, defined during the design phase and implemented during construction, will ensure that topography levels and pre-construction drainage patterns will be re-established after construction.

Floodplains: Floodplains adjacent to WWTP site will not be impacted. Therefore no mitigative measures are required.

Outfall 1 (Robeson Creek): No construction direct impacts will occur. Operational direct impacts will be positive. Therefore no mitigative measures are required.

Forcemain: Seven streams will be crossed by directional boring for the installation of the forcemain. One of those streams is a tributary of Robeson Creek, which has a FIRM identified floodplain.

For the protection of floodplains, engineering plans and specifications will ensure (Ref. Exhibit H-6):

1. Protection against flood damage at the time of initial construction;
2. Protection of natural floodplain configuration and natural barriers which are involved in the accommodation of floodwaters;
3. Erosion/water hazards that would result in increases in erosion, flood heights, or water velocities.
4. Controlled filling and grading to avoid erosion or flood damage;
5. Prevention or regulation of the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands.

Outfall 2 (Haw River): The Town of Pittsboro will secure the required permits for the construction of the outfall structure prior to any activity in the river (i.e. mobilization of construction equipment, grading, filling). Development may not begin until all necessary permits are issued. The protection of floodplains listed above plus the mitigation measures for the protection of Soils (erosion control measures) in F.2 and Wetlands and Streams in F.5 are applicable here.

**Indirect and Cumulative Impacts** to topography and floodplains would occur for new development related to increases in wastewater treatment capacity. Those impacts will be mitigated by the implementation of the Town of Pittsboro and Chatham County ordinances and regulations oriented to control growth in an environmentally-friendly approach (See Section F.0).

In addition, the following mitigative measures will be implemented for the protection of topography and floodplains:

- The Town of Pittsboro prohibits construction within a floodway, non-encroachment area or the 100-year floodplain. In situations where development is allowed, the property shall be developed in a way that has the least impact possible on the floodplain (i.e. a structure shall encroach into the floodplain only to the extent that it must in order to meet setbacks).
- Implementation of mitigative measures in Sections F.2, F.5, and F.10 addressing erosion and sediment control; wetlands and streams; and water resources will ultimately protect floodplains.

## **F.2. Soils**

To prevent or minimize **Direct Impacts** to Soils the Town of Pittsboro will utilize construction managers and inspectors from their selected engineering firm (s) to monitor construction activities and ensure that the mitigation requirements for the protection of soils listed below are met.

- As the forcemain is installed, construction contractors will be required to avoid silt transport wherever the soil is disturbed. However, these will most likely be one-time events that will not require revisiting.
- Construction and site restoration methods will comply with applicable ACE Nationwide Permit 12 and DWQ General Water Quality Certification 3374 conditions, and with NC Erosion and Sedimentation Control requirements.
- BMPs employed during construction will consist of settling and filtering devices, primarily sediment basins and silt fences. An erosion control plan, which addresses all erosion control measures, will be submitted to the NC LQS during the design phase.
- A plan, in compliance with the state erosion controls and regulations, will be submitted to NC DENR/DLR for approval.
- Erosion and Sediment Control Plans: The Town of Pittsboro ensures the correct installation and maintenance of erosion control structures to avoid soil loss. The plans will include:
  - Minimize clearing and grading in context of an overall stream protection strategy,
  - Protect waterways by preventing clearing adjacent to waterways,
  - Phase construction for larger construction sites (> 25 acres) to reduce the time and area that disturbed soils are exposed.
  - Stabilize soils as rapidly as possible (< 2 weeks) by establishing a grass or mulch cover.
  - Protect steep slopes, and avoid clearing or grading existing steep slopes as much as possible,
  - Establish appropriate perimeter controls at the edge of construction sites to retain or filter concentrated runoff from relatively short distances before it leaves the site,
  - Employ advanced settling devices with greater wet or dry storage volume,
  - Implement a certified contractors program so that trained and experienced contractors are on-site,
  - Sedimentation impacts should be minimized by regular inspection of erosion control measures, and sediment control devices should be maintained in good and effective condition at all times.
  - Erosion and sediment controls should be reassessed after storms.
- Contractors will immediately begin seeding and landscaping operations upon completion of any construction activity in order to re-establish vegetation on the disturbed areas of the project. This requires that the contractor comply with all sediment and erosion control measures and BMPs required under all applicable regulations to mitigate any potential direct environmental impacts that could occur as a result of the construction.
- Construction specifications to avoid the release of toxic substances to soils will include: Leaking of chemicals from construction equipment will be completely avoided by providing equipment maintenance and continuous containment and inspection of any toxic substances present (oils, solvents, cleaners).

**Indirect and Cumulative Impacts** to soils would occur as a consequence of development. Refer to Section F.0

### ***F.3. Prime and Unique Farmlands***

Once the building moratorium is lifted, indirect, and cumulative impacts to farmland soils will occur from the conversion of farmland soils to residential or business uses. However, this is the result of long-term planning by the Town of Pittsboro and Chatham County to provide housing within the smart growth concept to their growing population (Refer to Section F.0). It is worth noting that of the potential areas to be developed (Tracts 1, 2, and 3) only a small fraction of that area is currently in farm production.

The Town does not have an updated LUP that addresses changes of farmland soils to other uses. With help from state agencies, the Town will develop policies that will be in place when the benefits of this project are realized. Until those policies are in place, the Town of Pittsboro will employ the following guidelines that Chatham County has established in its LUP. Therefore, the policies that follow will be common to both entities:

Exhibit H-4/ Page 3: Establish a set of County-wide performance standards in order to guide development to appropriate locations, provide more certainty for landowners, and establish a basis for farmland preservation strategies.

Exhibit H-4/Page 5; item 23. Use impact fees, impact taxes on new development, public dedication, adequate facilities ordinances, and other strategies to help fund community facilities and programs, including schools, farmland protection and recreational and cultural facilities. The goal is to ensure that new development will pay for itself.

Exhibit H-4/Page 11: preserve both the form and function of rural character: the landscape, agriculture, and home-based businesses:

- Create residential development patterns that retain the *form* of “ruralness” through large-lot zoning, open space subdivisions, village clusters, or other design approaches.
- Preserve opportunities to farm; retaining the *function* of “ruralness.”
- Encourage home-based businesses in rural areas as long as the business activities meet performance standards to guard against nuisance conditions; examine the use of conditional use permits in rural areas.
- Examine use-value taxation and other tax equity measures for rural land use.
- Include consideration of housing diversity and affordability in rural areas.
- Emphasize businesses in rural portions of the county which produce improvements in environmental quality, tranquility and wildlife habitat.
- Consider an exclusive agricultural zone
- Expand incentives or subsidies for agricultural land uses.
- Promote the sale of local agricultural products within the county

### *F.3 Prime and Unique Farmlands (Cont'd)*

Exhibit H-4/Page 14: Extend land use regulations to the entire county in order to guide development to appropriate locations, provide more certainty for landowners and establish a basis for farmland preservation strategies.

Exhibit H-4/Page 16: To help achieve these objectives (maintain the "Rural Character" of the County), the county will support agricultural economic development, develop a package of voluntary farmland protection programs, provide development options to balance conservation and development in rural areas, and support the identification and protection of scenic and historic landscapes.

Exhibit H-4/Page 19-21: Establish a "Farms for the Future" program to encourage rurally compatible residential development in rural areas.

New development will be subject to review to ensure that the goals of the Town of Pittsboro and Chatham County pertaining to farmlands are met as outlined.

### *F.4 Land Use and Zoning*

No impacts to Land Use and Zoning will occur. Therefore, mitigative measures are not needed.

## ***F.5 Wetlands and Streams***

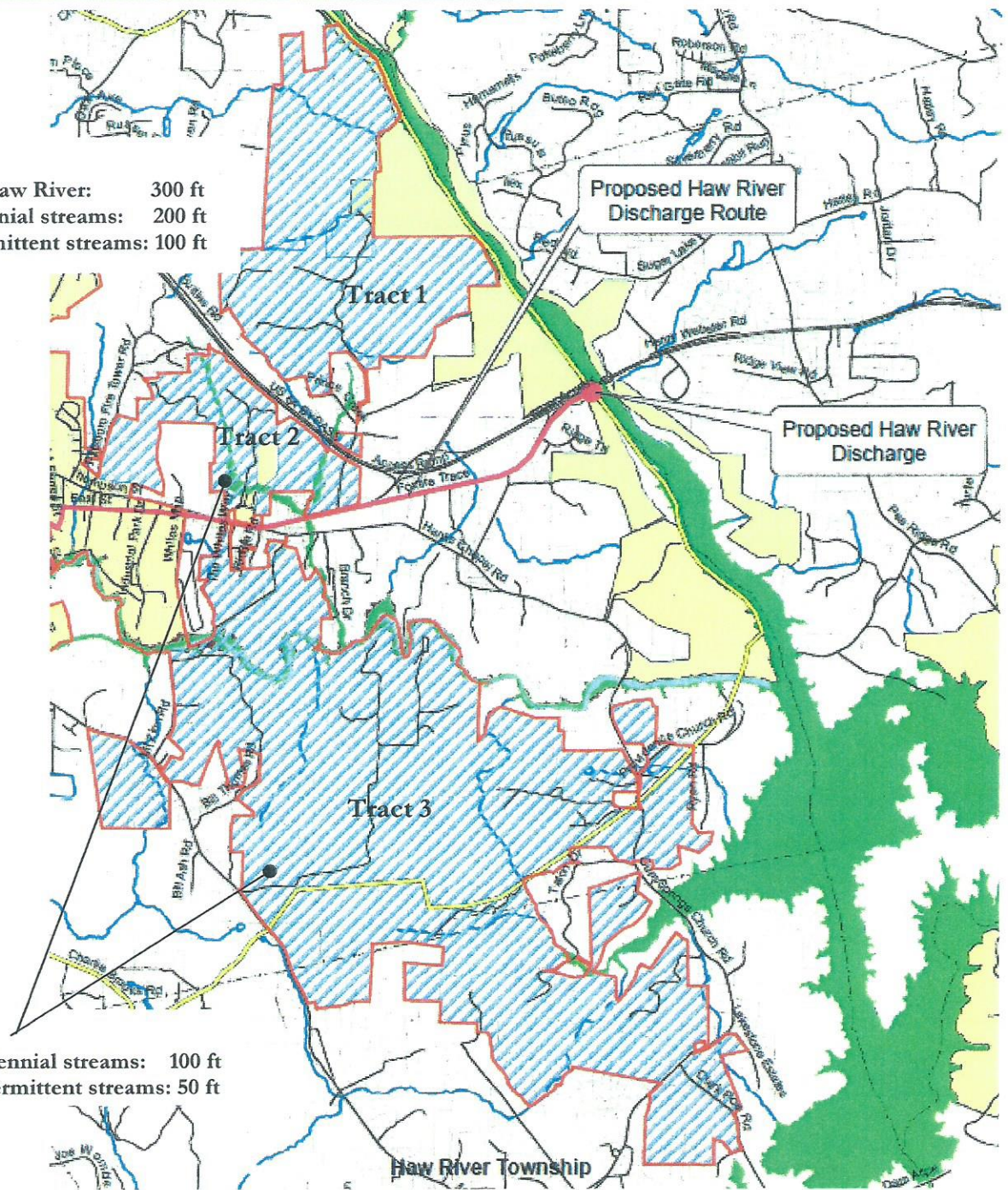
**Direct Impacts** to wetlands will not occur. Wetland WS-1, located on the northwest portion of the existing WWTP site, will not be impacted (See Section E.5- Alternative 3). To prevent or minimize direct impacts to streams, the Town of Pittsboro will utilize construction managers and inspectors from their selected engineering firm (s) to monitor construction activities and ensure that the mitigation requirements listed below are met. Some of these measures were adapted from the "Guidance Memorandum to Address and Mitigate Secondary and Cumulative Impacts to Aquatic and Terrestrial Wildlife Resources and Water Quality", published by the NC Wildlife Resources Commission in 2002. These measures are applicable to the protection of wetlands (no direct impacted with this project), streams and, consequently, water resources/quality:

- Delineation of streams will be performed according to the US Army Corps of Engineers or N.C. Division of Water Quality Methodology.
- The forcemain will be buried below grade and will have no permanent impact on floodway hydrology or on aquatic life habitats.
- Directional bore for stream crossing will be used.
- Stream crossings will be near perpendicular (75° to 105°) to stream flow to the extent practicable to minimize impacts to riparian vegetation.
- Stream crossings will be monitored at least every three months for maintenance needs during the first 24 months of the project and then annually thereafter.
- A plan, in compliance with the state erosion controls and regulations (See Section F.2) will be submitted to NC DENR/DLR for approval. The plan will specify temporary sedimentation and control structures necessary to reduce the effects of stormwater runoff during construction.
- Erosion and Sediment Control Plans: The Town of Pittsboro ensures the correct installation and maintenance of erosion control structures to avoid soil loss or sedimentation impacts to streams and nearby wetlands (refer to Section F.2).
- Maintenance/establishment of minimum-forested buffers for the protection of priority habitats: Buffers along the top banks of the Haw River will be 300 ft to comply with the perpetual riparian buffer established by the Lower Haw River State Recreation Area (i.e. Tract 1 and areas adjacent to the Haw River; See Figure 42). The vegetative buffer along other streams different from the Haw River within Tract 1 will be 200 ft for perennial streams and 100 ft for intermittent streams. Tracts 2 and 3: vegetative buffers will be 100 ft along perennial streams and 50 ft along intermittent streams.
- Pre-construction contours in stream crossings along the forcemain will be restored and cleared areas re-vegetated.
- Contractors will immediately begin seeding and landscaping operations upon completion of any construction activity in order to re-establish vegetation on the disturbed areas of the project. This requires that the contractor comply with all sediment and erosion control measures and BMPs required under all applicable regulations to mitigate any potential direct environmental impacts that could occur because of the construction.



**Tract 1:**

- Buffer width along the Haw River: 300 ft
- Buffer width along perennial streams: 200 ft
- Buffer width along intermittent streams: 100 ft



**Tracts 2 and 3:**

- Buffer width along perennial streams: 100 ft
- Buffer width along intermittent streams: 50 ft

Figure 42. Town of Pittsboro Proposed WWTreatment Plant: Vegetative Buffers in Potential Developable Areas

- Construction specifications to avoid the release of toxic substances will include:
  - Leaking of chemicals from construction equipment will be completely avoided by providing equipment maintenance and continuous containment and inspection of any toxic substances present (oils, solvents, cleaners).
  - Pesticides (including insecticides and herbicides) will not be used for maintenance of ROWs within the vegetated buffers indicated in Figure 42, or within floodplains and wetlands associated with these streams.

**Indirect and Cumulative Impacts** to wetlands and streams would occur because of development (Refer to Section F.0). In addition, indirect and cumulative impacts to wetlands and streams will be avoided or mitigated with the implementation and enforcement of the Town of Pittsboro and Chatham County regulations for the protection of those features:

- Specific Mitigation Measures that will be Implemented by the Town of Pittsboro for the protection of wetlands and streams:
  - For new developments, the Town of Pittsboro will encourage developers to set aside a portion of the land to be developed as green space and concentrate these areas along streams and rivers (see recommended buffer widths in Figure 42). Promote sufficient open space to reduce impervious surfaces.
  - For new developments, install grassed swales in place of curb/gutter and on-site stormwater management (bio-retention areas), except in areas with >5% slope.
  - For new developments draining to the Haw River (i.e. Tract 1) exceeding 6% imperviousness, the Town of Pittsboro requires the developer to include stormwater controls designed to replicate and maintain the hydrographic condition at the site prior to the change in landscape.
  - For new developments not draining to the Haw River (i.e. Tracts 2 and 3) the Town of Pittsboro commits to limit impervious surfaces to less than 10% and promotes sufficient open space to reduce impervious surfaces.
  - Buffers along the top banks of the Haw River will be 300 ft to comply with the perpetual riparian buffer established by the Lower Haw River State Recreation Area (i.e. Tract 1 and areas adjacent to the Haw River).
  - The vegetative buffer along other streams different from the Haw River within Tract 1 will be 200 ft for perennial streams and 100 ft for intermittent streams. Tracts 2 and 3: vegetative buffers will be 100 ft along perennial streams and 50 ft along intermittent streams.
- Chatham County Watershed Protection Ordinance (Exhibit H-5, Section 304, pages 16-18) establishes the following buffer widths for streams and wetlands within the Chatham County jurisdiction (i.e. south of Tract 3).
  - A minimum fifty (50) foot vegetative buffer for development activities is required along all intermittent waters indicated on the most recent versions of U.S.G.S. 1:24,000 (7.5 minute) scale topographic maps or as determined by local government studies.
  - A minimum one hundred (100) foot vegetative buffer for development activities is required along all rivers/perennial streams.
  - A minimum one hundred (100) foot vegetative buffer for development activities is required along all perennial and intermittent waters with 2,500 feet of rivers. The vegetative buffers listed above shall be required unless the applicant demonstrates that a lesser distance (but not less than thirty (30) feet) is adequate to guard against stream pollution. Evidence may be based on topography, soils, geology, and other pertinent information.
  - A minimum one hundred (100) foot vegetative buffer is required along all perennial streams for all new development activities that exceed the low-density option. A buffer with reduction is not allowed for development activities that exceed the low-density option.

No new development will be allowed in vegetative buffers:

- No new development is allowed in the buffer except for water dependent structures and public projects such as road crossings and greenways where no practical alternative exists.
- These activities should minimize built-upon surface area, direct runoff away from the surface waters and maximize the utilization of stormwater Best Management Practices. Desirable artificial stream bank or shoreline stabilization is permitted.

Protection of vegetative buffer:

- To avoid a loss of effectiveness in protecting streams, the stream buffer shall remain in natural undisturbed vegetation, except as provided below.
  - Clearing, grading or other land disturbing activities which would reduce the effectiveness of the buffer shall be re-vegetated.
  - Buildings and other features that require grading and construction shall be set back at least ten (10) feet from the edge of the buffer. Crossings by streets, driveways, culverts, railroads, recreational features, intakes, docks, utilities, bridges or other facilities shall be designed to minimize the amount of intrusion into the buffer. The buffer can serve to meet minimum lot size requirements if there is sufficient buildable area remaining on the lot.
  - Stream buffers can be used for passive recreational activities such as walking and bicycling trails, provided that service facilities for such activities, including but not limited to parking, picnicking and sanitary facilities, are located outside the buffer.
  - Trails running parallel to the stream shall be located at least ten (10) feet from the edge of the stream. Water oriented recreational facilities, such as boat or fishing piers, shall require an approved use permit from the Watershed Administrator.
  - Clearing and re-vegetating the stream buffer for the purposes of improving its pollutant removal efficiency may be permitted.
- Specific Mitigation Measures that will be implemented by Chatham County for the protection of the areas to be developed southeast of Pittsboro, near Jordan Lake, the Chatham County LUP in page 22 (Exhibit H-4, page 22) establishes that when designing a development project, developers will:
    - Protect sensitive lands such as wetlands, stream corridors, and steep slopes;
    - Maintain scenic views by protecting ridgelines and buffering road corridors, and
    - Provide connected open space.

The mitigation measures listed above will be outlined in the project plans, contract documents, and specifications during the design phase of the project. Contract documents and specifications require that the contractor "...comply with Federal, State, and local regulations pertaining to the environment, including but not limited to water, air, solid waste and noise pollution."

### *F.6 Public Lands, Scenic, and Recreational Areas*

No impacts to Public Lands, Scenic, and Recreational Areas will occur. Therefore, mitigative measures are not needed.

### *F.7 Areas of Archeological or Historical Value*

No impacts to Areas of Archeological and Historical Value will occur. Therefore, mitigative measures are not needed.

### *F.8 Air Quality*

**Direct Impacts** to Air Quality will possibly occur during the construction of the WWTP & forcemains.

**Indirect and Cumulative Impacts** could be the liberation of dust at the construction sites of homes built in the service area and the activities of large equipment at the home sites for their construction. Roads serving project areas will allow traffic to increase and further suspend particulate materials.

The Chatham County Zoning Ordinance (Exhibit H-3, page 36) specifically addresses what magnitudes of smoke or odors may be emitted from entities within the County in order to preserve air quality.

### *F.9 Noise*

**Direct Impacts** from noise will probably occur during construction of the WWTP and forcemains. As a result, contractors will be encouraged to work during daylight hours plus the Town will notify the people living adjacent to the project to keep them aware of the construction schedule as well as to hear observations of the contractors' activity schedule.

**Indirect and Cumulative Impacts** could result from the construction of new homes and roads as well as from traffic on highways serving the project areas.

The Pittsboro Noise Ordinance and the Chatham County Noise Ordinance (Exhibits H-7 and H-8) both regulate times of day that construction activities are permitted.

## **F.10 Water Resources**

### *Town of Pittsboro Regulations for Planned Growth (based on Density Options and Water Quality—in addition to F.0)*

Adding wastewater treatment capacity by implementing Alternative 3 is a high priority for the Town of Pittsboro. Alternative 3 will ensure a year round reuse-quality effluent at the discharge points. This will be a positive direct operational impact of this project.

Most of Pittsboro's corporate limits are located in the water supply watershed of Jordan Lake. The northern portion of Pittsboro's extraterritorial jurisdiction contains the water supply watershed for the intake located on the Haw River near Bynum that serves the Town of Pittsboro. Protection of public drinking water supply and water quality in general is a priority for Pittsboro. To that end, the Town participates in the State Water Supply Water Protection program which regulates new development in water supply watersheds including those in Pittsboro (Refer to the Town of Pittsboro LUP in Exhibit H-2, pages 9-11).

The Town has participated in this program since it started, and has adopted and implemented the following local zoning and subdivision regulations for the protection of water quality. Below are summarized the guidelines for water quality protection and buffers based on the Town's density options for new developments.

- Specific Mitigation Measures that will be Implemented by the Town of Pittsboro for the Protection of Water Resources/Quality:
  1. For new developments, the Town of Pittsboro will encourage developers to set aside a portion of the land to be developed as green space and concentrate these areas along streams and rivers (see recommended buffer widths in Section F.5).
  2. For new developments draining to the Haw River (i.e. Tract 1) exceeding 6% imperviousness, the Town of Pittsboro requires the developer to include stormwater controls designed to replicate and maintain the hydrographic condition at the site prior to the change in landscape. For new developments not draining to the Haw River (Tracts 2 and 3), the Town of Pittsboro limits impervious surfaces to less than 10% and promotes sufficient open space to reduce impervious surfaces.
  3. Installation of grassed swales in place of curb/gutter and on-site stormwater management (bio-retention areas) will be encouraged.
  4. Stream Buffers (Figure 42): Buffers along the top banks of the Haw River will be 300 ft to comply with the perpetual riparian buffer established by the Lower Haw River State Recreation Area (i.e. Tract 1 and areas adjacent to the Haw River). The vegetative buffer along other streams different from the Haw River within Tract 1 will be 200 ft for perennial streams and 100 ft for intermittent streams. Tracts 2 and 3: vegetative buffers will be 100 ft along perennial streams and 50 ft along intermittent streams.

### *F.10 Water Resources (Cont'd)*

- The Town of Pittsboro will enforce adherence to the water supply watershed regulations and the creation of best management practices program for stormwater including the stream buffers indicated above (Ref. Figure 42) and dispersal of runoff (See “ *Protection from Stormwater Runoff*”, further below) to improve water quality in the Robeson Creek watershed.
- The Town will monitor best management practices including retention ponds that are centrally located to serve a drainage area such as a creek basin better than stormwater management ponds located on scattered individual lots.
- A unified stormwater management strategy -administered by the Town- will provide greater water quality protection and be more efficient. A committee has been formed and is progressing towards developing amendments to the zoning ordinance and subdivision regulations to require low impact development strategies for stormwater management. These will supplement Water Supply Watershed requirements previously adopted. One of the members of the committee is an author of the Phase II manual. The Town is not required to implement the Phase II Stormwater Program but is preparing stormwater management plans for new developments.

To manage and protect its water resources, the Chatham County LUP outlines the following measures, which are applicable to the developable areas southeast of Pittsboro, near Jordan Lake (Exhibit H-4, Chatham LUP pages 43 and 44):

1. Establish sustainable lot sizes, development patterns, and development densities;
2. Maintain effective water supply watershed protection measures;
3. Maintain strong water resource protection buffer requirements;
4. Implement a comprehensive plan for assuring long-term viability of water and wastewater systems;
5. Promote more efficient use of water by reducing water use and increasing reuse of reclaimed water;
6. Promote restoration of impaired waters; and
7. Strengthen and build inter-local partnerships applicable to water resources management and protection.

#### Protection from Stormwater Runoff

The Town of Pittsboro is actively involved in stormwater management and aware of the need of innovative solutions for the protection of water quality. To this end, on December 7, 2006, the Robeson Creek Watershed Council, NC Cooperative Extension Service, Town of Pittsboro, NCSU College of Agriculture and Life Sciences, NC Dept. of Environment and Natural Resources, and US Environmental Protection Agency sponsored the Low Impact Development Workshop: Protecting Water Quality as Pittsboro Grows.

Pittsboro's proximity to the Research Triangle has led to an explosion of interest by developers for new residential and commercial growth. Balancing the need for growth with protection of water resources is a primary motivation of Pittsboro and Chatham County. The Chatham County LUP (pages 43 and 44) outlines protective measures for the protection of the County's water resources. Specific measures for the protection from stormwater runoff follow:

1. Specific Mitigation Measures numbered 1-6 listed in F.5: Wetlands and Streams: Indirect and Cumulative Impacts are applicable for the protection from stormwater runoff. In addition, the following measures will be implemented:
2. Check dams, level spreaders, and other associated best management practices shall be used to minimize the effect of stormwater runoff entering riparian buffer areas. In areas where slopes exceed 5%, stormwater collected in piped conveyance systems shall be directed away from surface waters and best management practices shall be employed at both the intake and the outlet areas.
3. Direct discharges of stormwater to streams will not be allowed. Effective energy dissipation at the pipe outlet shall be accomplished to prevent scour of the stream channel and buffer.
4. The ditching or piping of stormwater except when used in combination with grassed swales, level spreaders and check dams shall not be allowed in the riparian buffer. At no time should any mandated vegetated buffer zone be used for these engineered devices. In addition, the use of trees—particularly evergreen species— can be an effective component of an integrated stormwater management plan and can reduce the amount of surface water runoff by as much as 7% on a site due to interception, transpiration, and other processes.
5. Emergency management procedures shall provide for the containment of runoff from fighting residential, commercial, or industrial fires and for the removal and clean up of any hazardous spills that may endanger nearby streams, instead of flushing contaminants into waterways.

#### Protection of Surface and Groundwater Quality from the Introduction of Toxic Substances

No introduction of toxic substances is expected during the construction of the proposed project as contractors will follow construction specifications for the prevention of toxic substance releases during construction (See Section F.14).

Because of development, more people, traffic, and paved areas are expected. Consequently, the potential of release of toxic substances to the receiving waters surrounding Pittsboro exists. The Town and the County will encourage the implementation of active stormwater education programs and agricultural BMPs that will encourage the public to limit the use of common toxins such as lawn pesticides, herbicides, and fertilizers, to reduce the impact of pollutants in receiving waters.

#### Related Sections that complement this Section F.10

Protection of floodplains (F.1); implementation of erosion control measures to avoid soil loss and sedimentation (F.2), protection of wetlands and streams (F.5), and introduction of toxic substances to streams (F.14) complement this section since they are related to the protection of water resources.

### ***F.11 Forest Resources***

Impacts to Forest Resources will be minimized by the implementation of measures to promote growth in an orderly manner (See Section F.0).

Native, forested plant communities will be maintained within the buffer area of streams (refer to buffer width below), floodplains, and associated wetlands (this project will not impact wetlands). A closed canopy will be maintained over streams. Emphasis will be placed upon trimming trees, instead of tree removal.

Buffer width (Ref: Figure 42).

- Buffers along the top banks of the Haw River will be 300 ft to comply with the perpetual riparian buffer established by the Lower Haw River State Recreation Area (i.e. Tract 1 and areas adjacent to the Haw River).
- The vegetative buffer along other streams different from the Haw River within Tract 1 will be 200 ft for perennial streams and 100 ft for intermittent streams. Tracts 2 and 3: vegetative buffers will be 100 ft along perennial streams and 50 ft along intermittent streams.

### ***F.12 Shellfish, Fish, and their Habitats***

The biological survey by Dr. Carter and The Catena Group reported no presence of shellfish or fish listed as a Federal Species of Concern in the streams surveyed, except for a shell of a yellow lampmussel (a FSC) near the Haw River discharge site. It is worth noting that U.S. Fish & Wildlife confirmed that there are not FSC in the proposed project area (Refer to Mark Bowers' communication, July 8 2009 in Exhibit G-0).

The Town of Pittsboro and Chatham County ensure minimal disturbance, and, in most cases, complete avoidance to aquatic life and their habitats by using appropriate mitigative measures. for the protection of floodplains (F.1), erosion and sediment control (F.2), wetlands and streams (F.5), and water resources (F.10). Section F.0 lists the regulations to mitigate indirect and cumulative impacts related to growth that the Town of Pittsboro and Chatham County have in place.



### ***F.13 Wildlife, Natural Vegetation, and Endangered Species***

Impacts to Wildlife, Natural Vegetation, and Endangered Species will be minimized by the implementation of measures to promote growth in an orderly manner (F.0); the protection of wildlife, natural vegetation, and endangered species habitats (floodplains, soils, wetlands, streams, water resources), and through noise ordinances. Those measures are listed in Sections F.1, F.2, F.5, F.10, and Noise Ordinances in Exhibits H-7 and H-8.

U.S. Fish and Wildlife confirmed that there are no FSC within the project area (Mark Bowers' communication, July 8 2009 in Exhibit G-0). Nevertheless, sections of the Guidance Memorandum to Address and Mitigate Secondary and Cumulative Impacts to Aquatic and Terrestrial Wildlife Resources and Water Quality (NCWRC, 2002) were tailored for the proposed project for the protection of wildlife habitats (i.e. Section F.5 for the width of forested stream buffers and its preservation; Section 10 describes the specific measures for the protection from stormwater runoff, impervious surface limits, stormwater management).

In addition, as discussed in Section D.1 (Alternative 3) the proposed WWTP, equipment and facilities will be located at an elevation of at least 380 ft, outside of the 100-year floodplain. This follows the recommendation of the NC WRC guidance for the protection of species of concern. Mechanical or electrical components of the proposed WW treatment system will be located above the 100-year flood level.

### ***F.14 Introduction of Toxic Substances***

No toxic substances will be released during the construction of the proposed project. Construction specifications will include:

- Leaking of chemicals from construction equipment will be completely avoided by providing equipment maintenance and continuous containment and inspection of any toxic substances present (oils, solvents, cleaners).
- Pesticides (including insecticides and herbicides) will not be used for maintenance of ROWs within 100 feet of perennial streams and 50 feet of intermittent streams (no draining to the Haw River), or within floodplains and wetlands associated with these streams. For streams draining to the Haw River (i.e. streams in Tract 1) pesticides will not be used within 200 ft.
- Refer to Section F.10: "*Protection of Surface and Groundwater Quality from the Introduction of Toxic Substances*".