# FINDING OF NO SIGNIFICANT IMPACT
# AND ENVIRONMENTAL ASSESSMENT

## CITY OF DUNN

## WASTEWATER SYSTEM IMPROVEMENTS

**RESPONSIBLE AGENCY: NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES**

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# FINDING OF NO SIGNIFICANT IMPACT

Article I, Chapter 113A of the North Carolina General Statutes requires an action to be subject to the requirements of the North Carolina Environmental Policy Act (NCEPA) if it involves the expenditure of public funds and if a potential impact is anticipated to the environment. The project has been evaluated for compliance with the NCEPA and is determined to be a major agency action which will affect the environment.

| | |
|---|---|
| **Project Applicant:** | City of Dunn |
| **Project Description:** | The City of Dunn will upgrade its wastewater treatment plant including flow equalization facilities and sludge handling renovations. The city will also expand the Eastside Pump Station and Forcemain, upgrade the Machine Welding Pump Station Forcemain, and rehabilitate the Northern Outfall sewer, Morris Circle and Guy Avenue sewer, Spring Branch Road and Godwin Street sewer, and Downtown sewer area. |
| **Project Number:** | CS370417-05 |
| **Project Cost:** | $10,572,000 |
| **State Revolving Loan Fund:** | $6,622,000 |
| **Other Funds:** | $3,950,000 |

The review process indicated that significant adverse environmental impacts should not occur if mitigative measures are implemented, and an Environmental Impact Statement will not be required. The decision was based on information in the Engineering Report and reviews by governmental agencies. An Environmental Assessment supporting this action is attached. This FNSI completes the environmental review record, which is available for inspection at the State Clearinghouse.

No administrative action will be taken on the proposed project for at least 30 days after notification that the FNSI has been published in the North Carolina Environmental Bulletin.

Sincerely,

Daniel M. Blaisdell

for Coleen H. Sullins, Director
Division of Water Quality

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# ENVIRONMENTAL ASSESSMENT

## A. Proposed Facilities and Actions

The City of Dunn is proposing to upgrade and replace several components of its wastewater treatment and collection system to address infiltration/inflow (I/I) and overflow problems. The proposed project includes upgrading the wastewater treatment plant, expanding the Eastside Pump Station and Forcemain, upgrading the Machine Welding Pump Station Forcemain, and rehabilitating miscellaneous collection system components.

The Black River Wastewater Treatment Plant (WWTP), which treats all wastewater collected by the city, has exceeded its 3.75 million gallons per day (MGD) discharge limit numerous times during extensive wet weather events and has experienced overflow at a manhole near the plant. The proposed project will add an additional storage capacity of 3.0 million gallons through replacement of influent pumps, construction of an equalization pumping station, and installation of a 3.0 million gallon circular flow equalization basin and return flow piping ahead of the aeration basin. The WWTP upgrade will also include new digester aeration equipment, sludge thickener, pumps, and supernatant piping. The construction will take place entirely within the limits of the existing WWTP and not cause an increase in discharge from the plant.

The Eastside Pump Station has experienced overflows due to I/I issues. The proposed project will replace 6,850 feet of 14-inch forcemain with 20-inch forcemain, which will increase the pump station capacity by 600 gallons per minute (gpm) to a total of 2,200 gpm. Pumps will be renovated or replaced to accommodate the increased capacity. A portion of the forcemain will run between farm fields in the proposed alignment. The proposed alignment is contingent on coordination with NC DOT regarding future alignment of NC 55. An alternative alignment is identified in the event that construction in the proposed location is not possible. The primary alignment includes approximately 1,210 linear feet in agricultural land while the alternative alignment includes approximately 1,580 linear feet in agricultural land. There is no significant difference in impacts.

The Machine Welding Pump Station has also experienced overflows due to I/I issues. The proposed project will replace approximately 5,600 feet of 4-inch forcemain with 6-inch forcemain. This replacement will increase the pumping capacity from 114 gpm to 250 gpm to eliminate overflow concerns and to allow for normal growth in the area.

The proposed project also includes collection system rehabilitations to address areas with the highest I/I problems in the city. The project will include replacement or rehabilitation of Northern Outfall collector lines, Morris Circle and Guy Avenue sewer, Spring Branch Road and Godwin Street gravity sewer, and downtown collector lines. All of the lines are located under existing roadways, parking lots, and driveways, and none will be replaced with larger pipes.

Funding Status: The estimated total cost of the project is $10,572,000. The City of Dunn is applying for a State Revolving Fund loan of $6,622,000. The City has received a $3,610,000

grant from the Clean Water Management Trust Fund, $500,000 Rural Center Grant, and will apply for another Rural Center matching grant of $500,000.

## B. Existing Environment

Topography and Soils: The City of Dunn is located in the Inner Coastal Plain geologic province. The coastal plain area is underlain by unconsolidated gravel, sand, silt, and clay. The city is underlain by the Middendorf Formation, which is characterized by sand, sandstone, and mudstone. The topography is relatively flat with elevations ranging from 165 feet above sea level at the Eastside Pump Station to 210 feet above sea level in downtown areas. The topography includes gradual slopes to wetlands and streams. The WWTP and Eastside Pump Station are adjacent to the Mingo Swamp and Black River flood plains, respectively, but the project area is not within a designated 100-year flood plain.

The dominant soils within the project area are Lynchburg sandy loam, Norfolk loamy sand, Norfolk-Urban land complex, and Orangeburg loamy sand. Soils in the project area vary extensively because they have been previously disturbed by road or building construction and agricultural activities. Lynchburg sandy loam is somewhat poorly drained, while Norfolk loamy sand, Norfolk-Urban land complex, and Orangeburg loamy sand are well drained.

Surface Water: The project is located in the Cape Fear River Basin (03-06-18) in the headwaters of the Black River Sub-basin. Streams within the project area and nearby downstream drainages include the Black River, Juniper Creek, Mingo Swamp, and Stony Run. These waters are black-water (acidic) streams with limited buffering capacity, and all are designated Class C swamp waters which are protected for uses such as secondary recreation, fishing, wildlife consumption, aquatic life including propagation, survival and maintenance of biological integrity, and agriculture. Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities are infrequent, unorganized, or incidental in manner. The Black River is listed on the 303(d) list as partially supporting its best usage due to mercury contaminated fish tissues. The other area streams are not listed. Two perennial stream channels are within the area along the Machine Welding Pump Station Forcemain, and a third is located just south of the forcemain. A review of the channels in September 2008 found significant base flow and fish present.

Water Supply: The Cape Fear River serves as the City of Dunn's drinking water supply. Water is treated in Benson and pumped to neighboring communities, including the City of Dunn. Water is pumped into the city through two mains and stored in three elevated tanks.

## C. Existing Wastewater Facilities

The City of Dunn operates the Black River WWTP and collection system, which treats all wastewater collected by the city. The WWTP was originally designed with an average daily design flow of 2.275 MGD and peak design flow of 4.55 MGD. The plant was expanded in 1995 to a capacity of 3.75 MGD, with an average daily peak flow capacity of 7.5 MGD. The

treatment plant includes an influent pump station, bar screen, aerated grit removal, Parshall flume, two aeration basins, three final clarifiers, and gas chlorination. The 7.5 MGD effluent pumping station conveys treated wastewater through three miles of forcemain to discharge into the Cape Fear River.

Sludge handling facilities include a sludge return and a waste pump station, a dissolved air floatation thickening unit, an aerobic digester, a sludge aeration/mixing/holding tank, open-sand drying beds, and a liquid sludge loading pump station.

The collection system includes approximately 75 miles of sewer ranging from 8 to 30 inches in diameter. The Eastside Pumping Station and Forcemain includes three (3) suction pump lifts with a capacity of 1,200 gpm each. The system also includes five (5) small duplex pump stations with capacities ranging from 50 gpm to 175 gpm.

The NPDES permit limits for the Black River WWTP (NC0043176) are as follows:

| Parameter | Limit |
|---|---|
| Flow | 3.75 MGD |
| $BOD_5$ (monthly average April - October) | 12.0 mg/L |
| $BOD_5$ (monthly average November - March) | 24.0 mg/L |
| $NH_3$ as N (monthly average April - October ) | 2.0 mg/L |
| $NH_3$ as N (monthly average November - March) | 4.0 mg/L |
| TSS (monthly average) | 30.0 mg/L |
| Fecal Coliform (monthly average) | 200 count per 100 mL |
| Total Residual Chlorine (daily maximum) | 28 µg/L |

## D. Need for Proposed Facilities and Actions

The City of Dunn has experienced problems throughout its sewer collection system, at pumping stations, and at the WWTP due to excessive I/I for a number of years. Despite numerous efforts to minimize the effects of I/I, the system still overflows at a manhole near the WWTP and at the Eastside Pumping Station, which exposes surface waters to raw sewage. The WWTP was expanded in 1995 to the current capacity of 3.75 MGD. The increased capacity has helped reduce the frequency of surges through the system but has not eliminated I/I related problems. The daily permitted discharge capacity of the WWTP has been exceeded numerous times during extensive wet weather events.

The proposed water system improvements will reduce I/I issues, prevent overflows, and eliminate excess WWTP discharge above permitted limits that may cause water quality and aquatic habitat degradation. The city has a Special Order of Consent (SOC) with the state to address system overflows, and the project will enable the city to comply with that SOC. The key issues to be addressed include the following:

- Overflows at the Black River WWTP
- Overflows at the Eastside and Machine Welding pump stations
- Excessive I/I due to deteriorated pipes in the collection system.

Each component of the proposed project directly addresses one of the above issues, and the full project provides a comprehensive approach to addressing the city's wastewater system problems.

## E. Alternatives Analysis

An Alternatives analysis was performed on the wastewater system improvements proposal for the City of Dunn. The following alternatives were considered: (a) No-Action Alternative, (b) Optimum Operation of Existing Facilities, (c) Land Application, (d) Regional System, and (e) WWTP upgrades.

No-Action Alternative: The No-Action Alternative would mean no renovations to the system. The WWTP plant and collection system would continue to experience I/I related overflows, with a risk of decreased water quality and aquatic habits. Furthermore, the city would violate its current SOC, face fines, and face a zero-growth moratorium. This alternative was not chosen because it is not feasible.

Optimum Operation of Existing Facilities: This alternative would mean operating the existing WWTP plant at its most efficient level. The existing facilities cannot meet the required decrease in system overflows, so this alternative would have similar results to the No-Action Alternative with continued overflows, risks to the environment, and regulatory violations. This alternative was not chosen because it would not meet the city's needs, nor satisfy the SOC requirements.

Land Application: This alternative would involve spray irrigation of the WWTP discharge. Spray irrigation at a loading capacity of 0.30 inches per week would require approximately 3,300 acres of land to accommodate 3.75 MGD of effluent. The quantity of suitable soils in the project area is limited. Even if land were available, the cost of land acquisition and construction of a distribution and application system would cost more than $59,000,000, not including WWTP improvements, effluent storage lagoons, and other related costs. Furthermore, land application would not directly address the I/I and overflow issues at pump stations and manholes. This alternative is not cost efficient.

Regional System: This alternative would require a regional system serving the cities of Dunn, Benson, and Erwin. A regional system could address overflow issues at the WWTP itself, but it would not resolve I/I overflow issues at pumping stations and manholes. Overflows of raw sewage would continue at these locations with risks of water quality and aquatic diversity degradation. Furthermore, the initial 1970's 201 plan for the Cities of Dunn, Benson, and Erwin recommended that each city upgrade its treatment system independently, and infrastructure investments have already been made in accordance with those recommendations. This alternative was determined to be infeasible.

WWTP Upgrades: This alternative would include upgrading and replacing several components of the City of Dunn's wastewater treatment and collection system to address the I/I and overflow problems. The proposed project includes upgrading the WWTP, expanding the Eastside Pump Station and Forcemain, upgrading the Machine Welding Pump Station Forcemain, and rehabilitating miscellaneous collection system components. The WWTP upgrades would include flow equalization facilities for storage to handle increased inflows and improvements to the sludge handling facilities to improve efficiency of the treatment process. These improvements will alleviate overflow problems resulting from I/I. This alternative is preferred because it is a comprehensive approach to reducing I/I and resulting overflows throughout the system.

The new forcemain will run west from the pump station along an existing farm road until that road turns north, at which point, the forcemain will run to the west between farm fields to avoid conflict with a nearby residence. Once it reaches the road, the forcemain will be entirely within the existing road's right-of-way. An alternative alignment is planned in the event that coordinating with NC DOT regarding future alignment of NC 55 does not allow for construction in the originally-planned location. Both options would cross agricultural land, and the difference in impacts is negligible.

## F. Environmental Consequences and Mitigative Measures

Topography and Soils: The project will include some temporary excavation and stockpiling of soils, but construction areas will be returned to existing grade upon completion of the project. Approximately 21 acres will be disturbed. No permanent impacts to existing topography are anticipated. Similarly, the construction activities will temporarily disturb soils as sewer lines are excavated and replaced. Most of the soils have been previously disturbed by construction and agricultural activities. Areas disturbed by project construction activities will be graded to existing contours, and stabilized with standard erosion and sediment control practices. A sediment and erosion control plan will be submitted to the Division of Land Quality for approval prior to construction. Construction will be in accordance with NC DENR-approved Erosion and Sedimentation Control Plan and other provisions of the Sedimentation Pollution Control Act of 1973 (SPCA).

Land Use: The proposed project will not impact land use in the project area.

Wetlands: Minor direct impacts to approximately 0.1 acre of wetlands are anticipated, and the project may require an NWP12. The U.S. Army Corps of Engineers (USACE), in a letter dated November 25, 2008 (Action ID No. SAW-2008-03043), stated that the applicant must submit a pre-construction notification if any proposed wetland impacts will involve mechanized land clearing in a forested wetland. If it is determined during the permitting phase that additional permits or surveys are needed, then the project will adhere to USACE requirements. The topography and hydrology will be temporarily affected, but some wetland function will be retained. Directional drilling technology will be used to avoid impacts associated with crossing stream channels.

Important Farmlands: A portion of the Eastside Pumping Station Forcemain will cross an active agricultural field and impact less than three (3) acres of prime farm land. Extensive acreage of

farmland is available in the area, and minimal change in the productivity of local farmland is anticipated.

Public Lands and Scenic, Recreational, and State Natural Areas: No public lands or scenic, recreational, or state natural areas would be impacted by the proposed project.

Cultural Resources: In a letter dated February 5, 2009, the North Carolina State Historic Preservation Office (SHPO) stated that no historic archeological resources would be impacted by the proposed project.

Air Quality: Construction activity will cause minor temporary changes in air quality including emissions from equipment and dust from earth moving activities. Open burning will not be allowed during construction. The project is primarily a replacement of existing infrastructure; therefore, it will not create a new emission source or have permanent effects on air quality. Current minor odor issues will likely be reduced by eliminating overflows. An air permit may be required if the pump stations include standby engines or engine-driven generators or if there are particulate emission sources at the WWTP.

Noise Levels: Noise levels will increase temporarily during construction but will not occur outside normal operating hours (daylight), on weekends, or during holidays. The construction will take place in areas already associated with noise from traffic, farm equipment, and construction; therefore, the additional noise associated with this project is not expected to be noticeable. No permanent increase in noise levels is expected.

Water Resources: Elimination of overflows at the pump stations and WWTP will improve water quality in adjacent and downstream waters. Reduction of I/I in the system will likely increase infiltration into the surrounding soils to improve groundwater recharge. No impervious areas will be added, nor are changes in runoff from the project area expected. Construction will be in accordance with an approved erosion and sedimentation control plan, as well as the SPCA. Additionally, the contractor must minimize the amount of disturbed area during construction and utilize BMPs for erosion and sedimentation control.

Forest Resources: Approximately 1.25 total acres of forested area will be cleared along the Eastside Forcemain and Machine Welding Forcemain to generate a full construction corridor. The actual cleared area may be less because the corridor may overlap with already cleared roadside areas. Most of the area to be cleared was previously disturbed and is in its early succession or scrub-shrub stage.

Shellfish or Fish and Their Habitats: The project is not expected to impact shellfish or fish or their habitats. Directional drilling of stream channels and installation of sediment and erosion control measures between construction sites and nearby surface waters will be used to avoid impacts during construction. Elimination of overflow discharges at the pump stations and WWTP may improve diversity of downstream aquatic habitats.

Wildlife and Natural Vegetation: The project will likely require clearing of slightly more than one acre of land. The vegetation to be cleared is adjacent to roadways; therefore, little

permanent habitat will be disturbed. Wildlife in the area to be cleared is usually transient and not likely to be disturbed. In a letter dated November 13, 2008, the U.S. Fish and Wildlife Service stated that no impacts to threatened and endangered species will occur; however, marginal habitat for rough-leaved loosestrife is present in the wetland areas, approximately 500 linear feet of forcemains. Surveys will be performed, if required, during the 404/401 permitting process.

Introduction of Toxic Substances: The overall goal of the project is to reduce overflow from the system and, therefore, reduce pollutants entering the environment. Construction equipment will use substances such as fuels, lubricants, antifreeze, etc., that may be introduced through spillage or other events. Refueling will take place within the construction corridor, and spills will be immediately contained to reduce the risk of impacts.

The following potentially-contaminated sites are located within or adjacent to the project areas:

- Two underground storage tank sites in the Spring Branch/Godwin Street area;
- Two underground storage tank sites in the downtown rehabilitation area;
- One leaking underground storage tank site in the downtown area;
- One RCRA small quantity generator in the downtown area.

Contractors working on the project will be alerted to the possibility of contamination at these sites. Contaminated soils, if found, will be contained and handled in compliance with state and federal regulations.

The U.S. Fish and Wildlife Service reviewed the proposed project and concluded that the requirements of Section 7(a)(2) of the Endangered Species Act have been fulfilled. The North Carolina Wildlife Resources Commission (WRC), DWQ Fayetteville Regional Office, Division of Air Quality, and NPDES and PERCS units concur with the proposed project. The North Carolina Department of Cultural Resources is not aware of any properties of architectural, historical, or archaeological significance that would be affected by the project. Other state agencies did not submit objections to the project.

## G. Public Participation, Sources Consulted

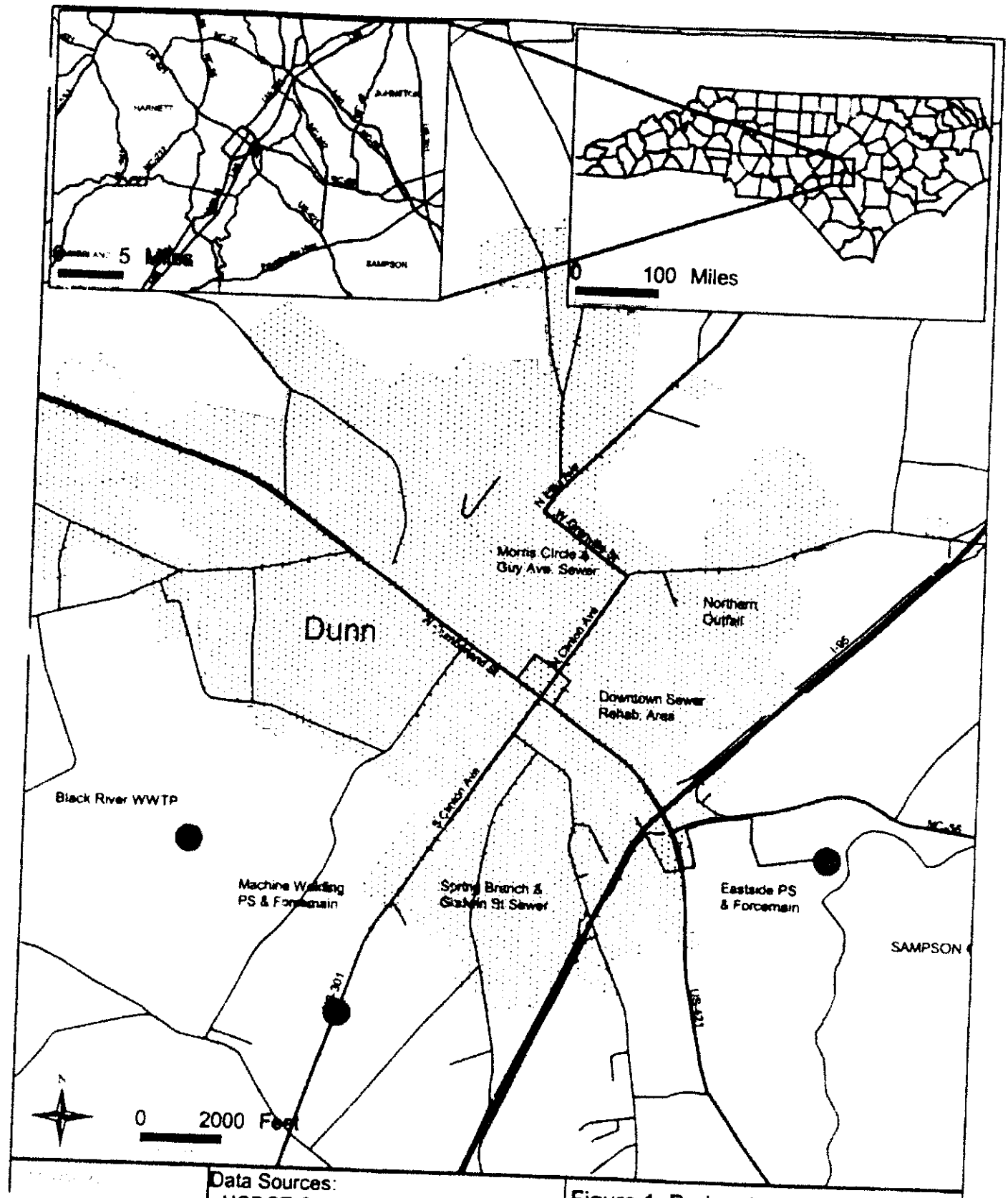
A public hearing was held on March 10, 2009 on the proposed project, and no objections to the project were made. The city uses tiered billing, and the current sewer user charge for residents within the City of Dunn is $23 for 5,000 gallons per month for a typical user. The proposed project will result in an increased charge of approximately $1 per month for a total of $24 for 5,000 gallons.

Sources consulted about this project for information or concurrence included the following:

1) City of Dunn
2) North Carolina Department of Environment and Natural Resources
   -Wildlife Resources Commission
   -DWQ Fayetteville Regional Office
   -DWQ PERCS Unit

-DWQ NPDES Unit
-Division of Air Quality
-Division of Environmental Health
-Division of Water Resources
-Division of Forest Resources
-Office of Legislative and Intergovernmental Affairs

3) North Carolina Department of Cultural Resources
4) North Carolina State Clearinghouse
5) U.S. Fish and Wildlife Service
6) U.S. Army Corps of Engineers

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Data Sources:
- NCDOT County Boundaries
- NCDOT Primary Roads
- NC OneMap Municipal Boundaries

Date: 9/24/08

Figure 1: Project Location
Environmental Assessment
Wastewater System Improvements
City of Dunn, NC