

**AMENDED FINDING OF NO SIGNIFICANT IMPACT
AND ENVIRONMENTAL ASSESSMENT**

TOWN OF MOORESVILLE

**ROCKY RIVER WASTEWATER TREATMENT PLANT INTERIM EXPANSION
WITH WET WEATHER STORAGE**

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

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DIVISION OF WATER QUALITY
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February 5, 2010

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**AMENDED
FINDING OF NO SIGNIFICANT IMPACT (FONSI)**

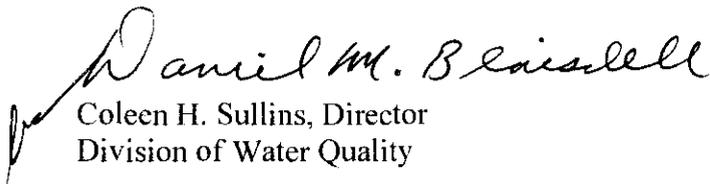
Article I, Chapter 113A of the North Carolina General Statutes requires an action to be subject to the requirements of the North Carolina Environmental Policy Act (NCEPA) if it involves the expenditure of public funds and if a potential impact is anticipated to the environment. The project has been evaluated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

Project Applicant: Town of Mooresville
Project Description: Interim expansion of the Rocky River Wastewater Treatment Plant from 5.2 million gallons per day to 7.5 million gallons per day to meet immediate sewer service needs. The project also includes partial off-line equalization using two (2) 1 million gallon above-ground storage tanks to manage peak wet weather flows.
Project Number: CS370409-04
State Revolving Loan Fund: \$13,275,000
Local Funding: \$8,830,000

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. The environmental assessment has been revised to include the equalization storage tanks. This FONSI 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 FONSI has been published in the North Carolina Environmental Bulletin.

Sincerely,


Coleen H. Sullins, Director
Division of Water Quality

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AMENDED ENVIRONMENTAL ASSESSMENT

This environmental assessment has been amended to include the wet weather storage added to the project after the initial FONSI was finalized. All changes and additions to the text are italicized.

A. Proposed Facilities and Actions

Figure 1 identifies the location of the proposed interim expansion to the Rocky River Wastewater Treatment Plant (WWTP) *and the wet weather storage tanks.*

New Treatment Facilities: The Town of Mooresville proposes to construct two (2) 1.0 million gallon per day (MGD) interim wastewater treatment plants which will provide 2.0 MGD of additional short-term capacity as an interim solution through approximately 2012. This interim solution will also include additional improvements of 7.5 MGD of tertiary filtration (using cloth media filters) and UV disinfection.

The interim expansion to the Rocky River WWTP will include an interim influent pump station located adjacent to the existing influent pump station. To supply wastewater to the interim expansion, three (3) 2.5 MGD pumps will be installed to provide 5 MGD of firm pumping capacity, with one pump as standby. A new headworks will provide for screening of raw wastewater prior to entering the aeration basins of the package plants.

Each of the interim plants consists of a circular steel tank in which the central core functions as a clarifier, and the outer rings serve as the aeration basins. The diameter of the clarifiers is 58 feet. The remainder of the interim improvements consists of a secondary effluent pump station, package disk filters, and an expanded cascade aerator.

The interim WWTP expansion will also include the addition of wet weather storage to accommodate peak wet weather flows and daily surges. A new equalization facility will be constructed consisting of two (2) storage tanks, a new Rocky River Pump Station to collect flow from the Rocky River sewer and combine it with the Presbyterian Pump Station (PPS) forcemain, and associated piping. The storage tanks will be above ground, circular, cast-in-place concrete with capacity of one million gallons each. The new pump station will include three (3) submersible pumps with a firm capacity of 2.0 MGD. Stored/equalized flow will drain by gravity to the new interim package plant and/or the existing WWTP. A jet aeration/mix system will be installed in the storage tanks to ensure proper mixing and aeration to minimize odors from the tank.

Funding Status: The Town of Mooresville proposes to apply for a State Revolving Loan in the amount of \$13,275,000 to cover the interim expansion of the Rocky River WWTP. The remainder of the project costs (\$8,830,000) will be funded by municipal bonds.

B. Existing Environment

Topography and Soils. Iredell County and the Town of Mooresville are located in the Piedmont physiographic province of North Carolina. The topography is gently rolling, with some of the lowest elevations surrounding Lake Norman and the highest areas along the ridgeline between the Catawba and Yadkin River Basins. Elevations within the service area range from 750 to 950 feet above mean sea level (ft msl). The Rocky River WWTP parcel is generally flat with elevations ranging from 750 to 830 ft msl. The western portion of the parcel slopes gently toward the Rocky River while the eastern portion slopes toward Dye Branch. Soils within the service area consist of Cecil fine sandy loam (CfB2, CfC2, CfD2), Chewacla, Lloyd fine sandy loam, Cecil sandy loam, and Cecil. Cecil fine sandy loam soils are the most prevalent. At the Rocky River WWTP site, Chewacla soils are the predominant soil type. The slopes within the Cecil soil series vary widely from between two and six percent (CfB2), six and ten percent (CfC2), and ten and 15 percent (CfD2). These soils are well drained and moderately permeable, and may be found on ridges and slopes. Chewacla soils are poorly-drained soils with moderate permeability. Slopes of these soils range from zero to two percent. Lloyd fine sandy loam is generally the same as the Cecil soils. However, the common subsoil surface is weathered basic or mixed acid and basic rocks.

Surface Water: The Mooresville service area is located in both the Catawba and the Yadkin River Basins. The Catawba River Basin contains Lake Norman, which is located within Subbasin 03-08-32. It has a water quality classification of WS-IV (Critical Area). Within the Yadkin River Basin, the service area encompasses the South Yadkin River (03-07-06) and the Rocky River (03-07-11) Subbasins. Back Creek and Withrow Creek are located within the South Yadkin Subbasin and have water quality classifications of WS-II (Protected Area) and C, respectively. Streams within the Rocky River Subbasin include Rocky River, Coddle Creek, and Dye Branch, which have water quality classifications of C, WS-II (Protected Area), and C, respectively. The Rocky River WWTP discharges into Dye Branch. Lake Norman, Back Creek, and Withrow Creek are not listed as impaired on the draft 2008 303(d) list prepared by the North Carolina Department of Environment and Natural Resources, Division of Water Quality (DWQ). Both Dye Branch and Rocky River within the Yadkin River Basin are listed as impaired on the 2008 draft 303(d) list. Dye Branch is categorized as having impaired aquatic life, while the Rocky River is listed as impaired for turbidity standard violations. Water bodies with a WS-II designation are drinking water supply bodies that are used for drinking, culinary uses, and food processing, where a WS-I classification cannot be achieved. These waters are usually located in predominantly undeveloped watersheds. WS-IV (Critical Area) waters are drinking water supply bodies for water that is used for drinking, culinary uses, and food processing. Class C waters allow for secondary recreation, fishing, wildlife, fish consumption, and aquatic life. Secondary recreation is defined as wading, boating, and other uses involving human body contact with water, where activities take place in an infrequent, unorganized, or incidental manner. Critical Area designations mean that the water bodies are contained within one-half mile and drain to the normal pool elevation of water supply reservoirs. These are areas where the risks associated with pollution are greater than the remaining portions of the watershed. Protected areas are only located in WS-IV watersheds and are defined as land within 5 miles of, and draining to the

normal pool elevation of water supplies/reservoirs, or within 10 miles upstream of, and draining to a river water intake.

Water Supply: The Town of Mooresville obtains its drinking water from Lake Norman.

C. Existing Wastewater Facilities

The Town of Mooresville's wastewater collection system consists of approximately 187 miles of gravity sewer ranging from 8-inch diameter pipe to 42-inch diameter pipe. Approximately 43 miles (23 percent) of the collection system are interceptor sewers with diameters of 12 inches or larger. The town also has 34 pump stations ranging in size from under 0.1 MGD to nearly 3.0 MGD firm capacity. Force main diameters range from 2 to 24 inches.

The Rocky River WWTP was originally constructed in 1984. Over the years, the town has made miscellaneous improvements, and the WWTP currently operates at 5.2 MGD.

Currently, the Rocky River WWTP contains influent coarse screening, influent screw pumps, influent fine screening, influent measurement and pH adjustment. The influent is treated by two aeration basins and two secondary clarifiers. Final disinfection is completed by chlorination and dechlorination. The effluent passes through cascade aeration before being discharged into Dye Creek, a tributary to the Rocky River.

The NPDES permit limits for the Rocky River WWTP (NC0046728) are:

<u>Parameter</u>	<u>Limit</u>
Flow	5.2 MGD
BOD ₅ (monthly average)	24.0 mg/L
NH ₃ -N (monthly average Summer-Winter)	2.6 mg/L and 4.0 mg/L
TSS (monthly average)	30.0 mg/L
Fecal Coliform (monthly average)	200.0 Count 100 mL
Total Residual Chlorine (daily maximum)	18 µg/L

D. Need for Proposed Facilities and Actions

During the 1990s, the Town of Mooresville's population doubled. Since the Year 2000, the population has grown at an estimated rate of 1.4 percent per year. Currently, 98 percent of the town is within the service area. Based upon information presented in the most recent master planning document, population projections were made based upon various projection methods. Using the most recent population estimates for 2008, the town estimated that by 2010, the need for capacity would exceed the current capacity of the Rocky River WWTP (5.2 MGD). The proposed project of expanding the Rocky River WWTP to 7.5 MGD will serve as an interim solution, while the town explores long term solutions to their wastewater needs over a 20-year planning period. *The wet weather storage system is needed because the current and planned*

configuration of the interim WWTP expansion will not be able to manage the peak flow expected from wet weather flows when the planned Presbyterian Pump Station is online.

E. Alternatives Analysis

An alternatives analysis was performed on the expansion of the Rocky River WWTP for the Town of Mooresville *and wet weather storage at the Rocky River WWTP*. The alternatives considered for the WWTP were: (1) No-Action Alternative, (2) Optimum Operation of Existing Facilities, (3) Regional Wastewater Treatment System, (4) Land Application or Reuse of Treated Effluent, and (5) Interim Expansion to Existing WWTP with Direct Discharge to Dye Branch. *The alternatives considered for wet weather storage were: (1) Partial Offline Equalization, (2) In-line Complete Equalization, and (3) Treatment of All Flow through the Existing and Interim WWTP.*

WWTP Expansion Alternatives:

No-Action Alternative: This alternative would consist of no construction at the Rocky River WWTP. Currently, the Mooresville Wastewater Treatment Plan does not have adequate treatment capacity for the 20-year planning period. The WWTP would continue to operate at its current capacity, and would reach its permitted treatment capacity in approximately 2010. Wastewater treatment for additional growth would occur via package WWTPs or private septic systems. Alternatively, the town could declare a moratorium on growth, to slow or stop it. The No-Action Alternative is not feasible because it does not meet the need of the project.

Optimum Operation of Existing Facilities Alternative: For this alternative, operations at the Rocky River WWTP would be optimized to operate in the most efficient manner possible. In 2008, the town applied for an ATO, which would increase the capacity of the WWTP from 5.2 MGD to 5.5 MGD until the proposed project could be constructed and implemented. This alternative is infeasible because the existing treatment facilities, even with the ATO, would lack adequate capacity to meet speculative treatment capacity needs for the planning period associated with the interim expansion and would not provide adequate treatment through 2012. Therefore, this alternative was rejected because it does not meet the project need.

Regional Wastewater Treatment System Alternative: Under this alternative, 2 MGD of wastewater would be diverted from the town to the Rocky River Regional Wastewater Treatment Plant, which is operated by the Water and Sewer Authority of Cabarrus County (WSACC) via 28,500 l.f. of 24-inch gravity pipeline. This alternative would also consist of upgrading the Rocky River Regional WWTP, obtaining the necessary easements, and performing associated engineering and permitting tasks. The easements were recommended to be 100 feet wide to allow for the installation of future pipelines. The mid-range value of the capital costs for this alternative is \$30,330,000. Therefore, this alternative was eliminated from consideration based on the project costs.

Land Application or Reuse of Treated Effluent Alternative: Under this alternative, land application or reuse of treated effluent would be implemented in lieu of a direct discharge to Dye

should also be applied to wetlands unless Federal and State permits and certifications are obtained for necessary impacts. See the NCWRC letter in the Attachment for more details.

Important Farmlands: There will be no impacts to important farmlands because no lands with these designations are located on the WWTP parcel.

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

Cultural Resources: In a letter dated October 23, 2008, the North Carolina State Historic Preservation Office (SHPO) stated that no historic resources would be impacted by the proposed project (Project No. ER 08-2237). *A second letter dated November 10, 2009 confirmed that no historic resources would be impacted by the wet weather storage addition to the project.*

Air Quality: Construction of the proposed project will cause temporary increases in emissions of particulate matter, due to combustion of by-products and dust generation. These temporary impacts will cease once construction of the project is complete. No operational impacts will occur with the exception of periods when particulates may temporarily increase because of testing or use of emergency generators. Dust control measures will be used during construction, and no open burning will be allowed. Additionally, construction equipment will be properly maintained with the appropriate air pollution control devices in place. Odor control mechanisms will be incorporated into the project design to eliminate any nuisance odors. If additional generators are added, modifications to the appropriate permits will be sought. *The equalization tanks will include a jet aeration/mix system to ensure proper mixing and aeration to minimize odors from the tank.*

Noise Levels: Elevated noise levels will occur during construction of the proposed project. Once the WWTP interim expansion is complete, noise levels will return to pre-construction levels. During the interim expansion, construction will be allowed during normal working hours, and all construction equipment must use mufflers.

Water Resources: Construction of the proposed project will add approximately 0.48 acre of impervious area to the site *and will include one stream crossing for the forcemain across Dye Branch.* Additionally, grading and construction activities associated with the project could temporarily increase the siltation on and immediately downstream of the site. Upon operation of the proposed project, direct impacts will occur to Dye Branch, due to the increase in the effluent discharge. Rather than cause negative impacts, removing the byproducts of chlorine disinfection will cause a positive impact. All construction must be conducted in accordance with the DENR-approved Erosion and Sedimentation Control Plan, and the SPCA. Bioretention ponds will be constructed in order to capture and treat stormwater from the site. Riparian and forested buffers should be maintained onsite to serve as additional sedimentation and erosion control measures. Additionally, the requirements set forth in the September 15, 2008 letter from the NCWRC must be followed. See the Attachment for more details.

Forest Resources: No impacts to forest resources will occur, as all construction related to the interim expansion of the Rocky River WWTP will occur within existing grass cover. *Minor impacts to less than one acre of forested land will occur for piping to the equalization basins.*

Shellfish or Fish and Their Habitat: Construction of the proposed project may impact shellfish or fish and their habitats, due to potential erosion and sedimentation into Dye Branch. *In addition, approximately 30 linear feet of habitat may be subject to permanent but minor impacts at the force main crossing of Dye Branch.* Once the proposed project begins operation, the discharge to Dye Creek will increase. However, the project will result in beneficial impacts to shellfish or fish and their habitats because chlorine disinfection will not be used anymore. During construction of the proposed project, the contractors must follow the provisions in the DENR-approved Erosion and Sedimentation Control Plan, as well as those in the SPCA. Additionally, the recommendations in the letter dated September 15, 2008 from the NCWRC should be followed. See the Attachment for more details.

Wildlife and Natural Vegetation: No protected species, neither flora nor fauna, are expected to be impacted by the construction of the proposed project (U.S. Fish and Wildlife Service, September 18, 2008 and *November 4, 2009*, Log No. 4-2-08-289).

Introduction of Toxic Substances: As part of the construction process, substances such as fuels, lubricants, antifreeze, etc. will be used and may be introduced into the environment through spillage or other events. All construction activity will be performed in accordance with Federal, State, and local rules and regulations in order to avoid environmental impacts.

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, that the NCWRC, DWQ Mooresville Regional Office, Division of Environmental Health, NPDES Unit, and the Division of Water Resources concur with it. 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 April 20, 2009 on the proposed project. No opposition to the plan was presented at the public hearing. *Previous rates analysis indicated the project would result in an increase of \$7.29 for a total of \$32.29 at 5,000 gallons per month for the typical user. This rate has already been exceeded by the Town as part of the Town's comprehensive Capital Improvement Plan and the resulting systematic rate schedule increases that encompass the proposed project as well as other needed capital improvements.*

Sources consulted about this project for information or concurrence include:

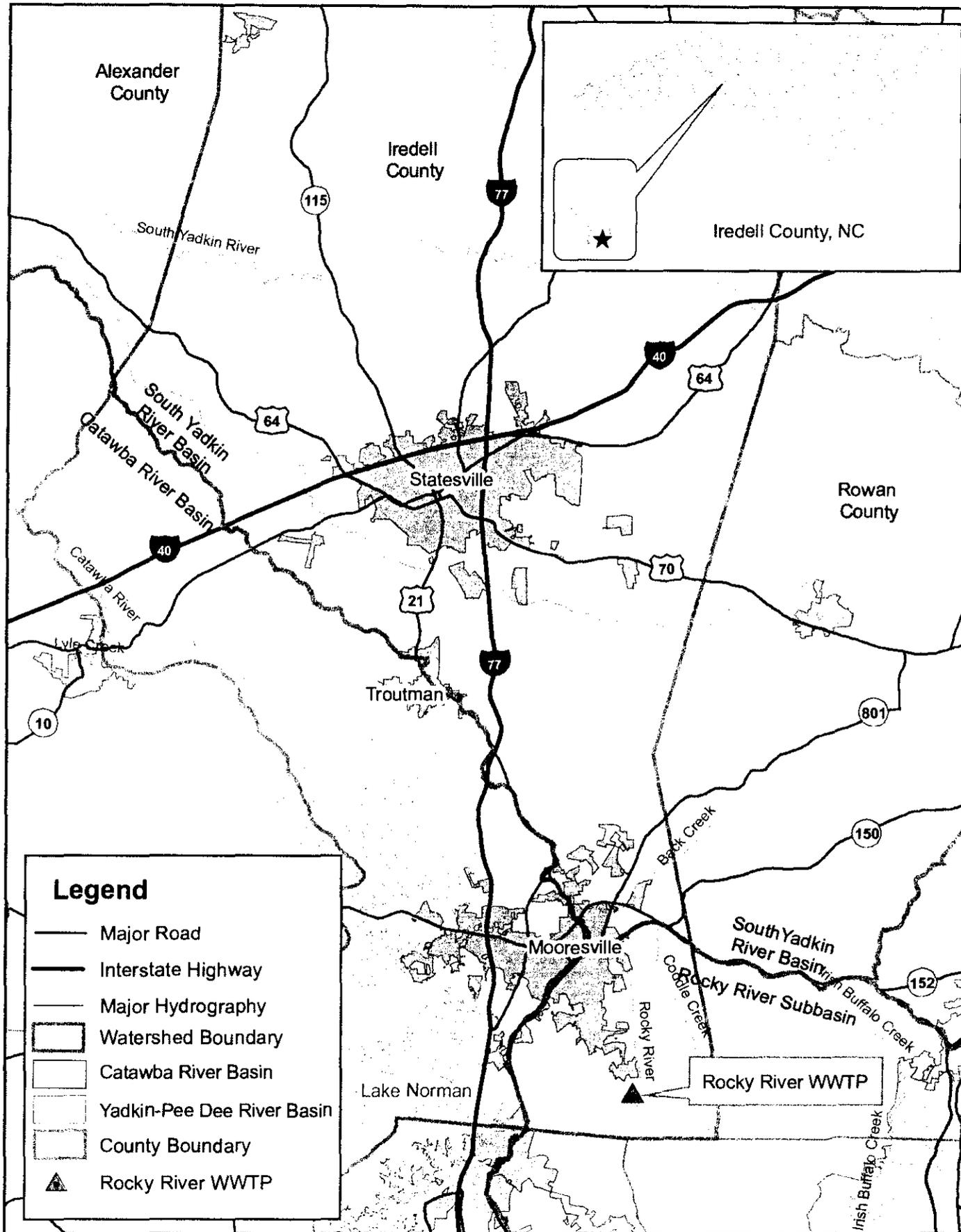
- 1) Town of Mooresville
- 2) North Carolina Department of Environment and Natural Resources
 - Wildlife Resources Commission
 - DWQ Mooresville Regional Office – Aquifer Protection Section

- DWQ Mooresville Regional Office – Surface Water Protection Section
 - DWQ NPDES West Unit
 - Division of Environmental Health
 - Division of Water 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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CH2MHILL

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Figure 1
Rocky River WWTP and Vicinity
Town of Mooresville
Iredell County, NC

Attachment

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☒ North Carolina Wildlife Resources Commission ☒

Gordon Myers, Executive Director

MEMORANDUM

TO: Melba McGee, Legislative and Intergovernmental Affairs
Dept. of Environment and Natural Resources

FROM: Ron Linville, Regional Coordinator
Habitat Conservation Program 

DATE: March 4, 2009

SUBJECT: State Clearinghouse Project No. 1493, Engineering Report & Environmental Assessment (EA) of January 2009 for the Rocky River Wastewater Treatment Plant (WWTP) Expansion, Mooresville, Iredell County

This correspondence responds to a request by you for our review and comments on the Environmental Assessment (EA) for the referenced sewer improvements project. Biologists with the North Carolina Wildlife Resources Commission (NCWRC) are familiar with habitat values in the area. The NCWRC is authorized to comment and make recommendations which relate to the impacts of this project on fish and wildlife pursuant to Clean Water Act of 1977, North Carolina Environmental Policy Act, US National Environmental Policy Act, Endangered Species Act (16 U. S. C. 1531-1543; 87 Stat 884), the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d) and/or Federal License of Water Resource Project Act (Federal Power Act-16 U.S.C. 791a et seq.) as applicable.

The proposed WWTP expansion for the Town of Mooresville (Town) is indicated as needed due to limited WWTP capacity and anticipated population growth. Permitted flow is currently 5.2 Million Gallons per Day (GPD). A maximum flow of 3.1 MGD was reported for 2008. The current WWTP is capable of treating up to 5.5 MGD. A maximum average flow of 7.3 MGD is anticipated by 2012 and current capacity will be exceeded by 2010. A State Revolving Fund (SRF) loan of \$17,500,000.00 and Municipal bonds of \$3,164,000.00 will be secured for this interim expansion project. The submittal indicates that current disinfection processes will be converted from gaseous chlorine to Ultra-violet disinfection with cascading aeration prior to the discharge of treated wastewaters.

The current "interim solution" project proposed in this document states that additional treatment capacity will be provided through three steps including a) re-rating the current WWTP, b) the construction of package WWTPs, and c) construction of a new facility or regionalize with neighboring communities. Due to concerns about possible regional wastewater facilities, this office contacted project consultant, James Nagel on February 25, 2009 to discuss the project. According to Mr. Nagel, the "interim" solution will be restricted to the first two steps above and step "c" above will require additional environmental documents and review at a later date. Accordingly, no review and evaluation has been provided by this office for step "c" or "Phase 1" or the "final step."

The Town uses water from the Catawba River and discharges wastewater to the Rocky River (Yadkin River basin). According to the Town, they have a "grandfathered" 9.54 MGD Interbasin Transfer (IBT) capability without any technical or environmental considerations. Due to previous and current IBT court cases, the Town should consider that this "grandfathered" IBT may not be sufficient should IBT considerations change due to pending environmental law proceedings.

Other than the IBT, environmental impacts from the proposed expansion are indicated to be mitigated through Town land use planning and zoning processes, strict exclusions for providing public utilities to extra territorial developments that do not meet Town planning ordinances, and routine sediment and erosion control requirements.

In conclusion, we will not object to this interim, steps a & b, WWTP project providing the expansion is limited to upgrades at the existing WWTP, including changing current chemical disinfection processes to Ultra-violet (no use of chlorine and de-chlorination chemicals) and aeration. We refer project proponents to our previous scoping comments and our EA comments of September 15, 2008. Those comments and recommendations should be considered and acted on as appropriate when the Town extends public utility services or annexes new lands during this interim period. Further codification of protective land use requirements should occur before any future environmental documents are submitted for the construction of any new WWTPs, any regionalized WWTP, or any interconnection to other utility entities.

Thank you for the opportunity to review and comment on this project. If you have any questions regarding these comments, please contact me at 336-769-9453.



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OCT 14 2008

CONSTRUCTION GRANTS &
LOAN SECTION

North Carolina Wildlife Resources Commission

Gordon Myers, Executive Director

MEMORANDUM

TO: Melba McGee, Legislative and Intergovernmental Affairs
Dept. of Environment and Natural Resources

FROM: Ron Linville, Regional Coordinator
Habitat Conservation Program

DATE: September 15, 2008

SUBJECT: State Clearinghouse Project No. 1470, Town of Mooresville (Town), Engineering Report (ER) and Environmental Assessment (EA) for the Rocky River Wastewater Treatment Plant (WWTP) Interim Plant Expansion, Iredell County

This correspondence responds to a request by you for our review and comments on the Engineering Report (ER) and Environmental Assessment (EA) for the referenced WWTP improvements. Biologists with the North Carolina Wildlife Resources Commission (NCWRC) are familiar with habitat values in the area. The NCWRC is authorized to comment and make recommendations which relate to the impacts of this project on fish and wildlife pursuant to Clean Water Act of 1977, North Carolina Environmental Policy Act, US National Environmental Policy Act, Endangered Species Act (16 U. S. C. 1531-1543; 87 Stat 884), the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d) and/or Federal License of Water Resource Project Act (Federal Power Act-16 U.S.C. 791a et seq.) as applicable.

The ER's recommended alternative is Alternative 5, Interim Expansion of the Existing Facilities with Conjunctive Reuse (Section 4.5, page 4.2 of ER). Even though a regional WWTP is being evaluated between Cabarrus County and the Town, the scope of this project is limited to an expansion in WWTP capacity by 2.0 Million Gallons per Day (GPD) for a total of 7.5 MGD. The WWTP National Pollutant Discharge Elimination System (NPDES) permit currently allows a discharge of 5.5 MGD. In addition to the provision of tertiary treatment during this expansion, the WWTP will use Ultraviolet (UV) disinfection instead of chlorine and provide discharge aeration. Reuse of reclaimed wastewater for golf course irrigation is possible, but not guaranteed. The increased discharge will discharge into Dye Creek, which has been indicated as 303(d) impaired for aquatic life based on biological integrity.

Environmental impacts associated with this interim expansion should be acknowledged and mitigated as continued growth and development will occur when average daily flows expand from about 3.0 MGD to 7.5 MGD. Accordingly, we continue to be concerned about Secondary and Cumulative Impacts (SCI) that will occur from urbanization and annexations, especially in the Rocky River basin. SCI impacts associated with current and future Inter-Basin Transfer (IBT) issues are concerns as the allowable (grandfathered) IBT is 9.54 MGD. However, according to previous communications with Town

representatives concerning the Presbyterian Road sewer extensions, the Town has or will implement measures to reduce stormwater and aquatic habitat degradation through stormwater management and undisturbed forested buffer provisions. In addition, the Town has requirement that developments desiring to become part of the Town must comply with these or equally protective measures.

Based on our review of the ER and EA, we will not object to Alternative 5, Interim Expansion (2.0 MGD) of the Existing Facilities with Conjunctive Reuse providing the following items will be assured in the near term:

1. This project and future regional facilities should conform to current and future IBT requirements.
2. The additional NPDES discharge flow will not negatively affect channel form and stability of Dye Creek (Branch) and Rocky River.
3. The WWTP will cease using chlorine and de-chlorination chemicals and these chemicals will not be stored at the WWTP facility or used to treat wastewaters during WWTP treatment failures or bypass events.
4. The Town will ensure, at a minimum that commitments made for the Presbyterian Road sewer extension will be applied to all municipal service areas served by this WWTP expansion.
5. The Town ensures that stream buffers are accurately applied to all jurisdictional waters, including wetlands. The current use of USGS maps or "as surveyed through hydrologic study and determined to be classified as Territorial Waters of the State" should be modified to require due diligence to delineate Clean Water Act jurisdictional waters/wetlands by qualified environmental professionals. These delineations should include US Army Corps of Engineers and/or NC Division of Water Quality verification.
6. The Town ensures that undisturbed forested buffers are accurately indicated in all local buffer ordinances, not just in Water Supply basins. The ER and EA, including Table 7-5, do not appear to show undisturbed forested buffer requirements for perennial and intermittent streams. Buffers provided for streams should also be applied to wetlands unless federal and state permits and certifications are obtained for necessary impacts.
7. Where practicable, the Town should encourage watershed controls and stream restorations to reduce sedimentation associated with Dye Branch and the Rocky River. Upstream stormwater management as well as sedimentation decreases within the sub basin should be pursued especially if the WWTP expansion will exacerbate sedimentation issues (see page 7, Sediment Transport of EA).

As previously noted for the Presbyterian Road project, this office routinely recommends the following for land use planning to mitigate developmental impacts to ecosystems and to promote and ensure maintenance of aquatic and terrestrial habitats:

- Prior to tree removal and site clearing activities on a proposed development site and prior to local site planning and zoning approvals, all jurisdictional waters and wetlands should be professionally delineated pursuant to the Clean Water Act (CWA) using US Army Corps of Engineers (COE) and NC Division of Water Quality (DWQ) criteria. This should be accomplished as part of the developer's due diligence and site evaluation process. CWA permits are required for driveways, parking lots, road crossings and utility (including sewer) lines that impact waters of the United States. Should impacts occur to jurisdictional waters or wetlands, stormwater management should be provided. Agricultural or forestry exemptions must not be allowed when the ultimate use of a property will be a development.

- Jurisdictional streams, wetlands and highly erodible area buffers should be maintained or restored as undisturbed forested buffers. In watersheds supporting listed species, these buffers should be 100' for intermittent channels and 200' for perennial channels. In watersheds without listed species, these buffers should be 50' and 100' respectively. Irregardless of size (50' ought to be minimum in my view), maximum available undisturbed forested buffers should be provided. Buffer averaging may be an acceptable alternative due to land contours and floodplain configuration providing the amount of buffering provided is equal to or greater than prescribed buffers. Buffers should be permanently preserved as common conservation easements instead of streams being subdivided into portions of individual lots. Where practicable to avoid impacts, streams should be relocated using state-of-the-art natural channel design and native vegetation instead of piped. State-of-the-art natural channel design restorations should be vigorously pursued to address historical mismanagement of area streams and buffers. Local authorities should keep sewer lines, water lines, and other utilities out of riparian buffers and along the floodplain fringe whenever practicable.
- Bridges are recommended for all permanent roadway crossings of streams, floodplains and associated wetlands to eliminate the need to fill and culvert active floodplains. Floodplain capacities and floodplain functions must be maintained with bridges and culverts. If culverts must be used, culverts should be designed and installed to allow passage of aquatic organisms. Culverts 48" or larger must be buried at least a foot (12") below the streambed. Culverts less than 48" diameter must be buried to a depth equal to or greater than twenty (20) percent their size to provide aquatic life passage. These measurements must be based on natural thalweg depths. Culverts should be situated so that no channel realignment or widening is required. Widening of the stream channel at the inlet or outlet of structures causes a decrease in water depth and velocity which result in sedimentation and reduction of aquatic passage. Flat concrete aprons between wing-walls must not be used. Riprap must not be placed in the streambed. If multiple barrels are needed, base flow barrels must be installed as indicated above while any additional barrels should be placed so that their floors are located on the active bank full elevation. These bank full barrels must be connected to active floodplain benches to provide natural dimensions for the base flow channel with sufficient water depth during low or normal flows to accommodate movement of aquatic species. If culverts are long and/or sufficient slopes exist, alternating baffles should be provided in a manner that conforms to channel bends upstream and downstream, mimics natural meanders, prevents upstream scour and downstream deposition, contains typical bed load materials, and provides resting areas for aquatic species. If multiple barrels are used, at least one pipe or barrel should be designed to remain dry (except for flood events) with a floor material that is easily used by terrestrial wildlife for passage.
- Stormwater management should maintain, to the extent possible, pre development hydrograph conditions. Stormwater control measures should be implemented before impervious surfaces reach 10% for most watersheds and 6 % for watersheds with listed species present downstream. Low Impact Development (LID) techniques are encouraged for all new developments and redevelopment efforts. If impervious area exceeds ten (10) percent, stormwater management strategies that maintain pre development hydrograph conditions are recommended. Information on LID practices and techniques can be found at the following websites: www.lowimpactdevelopment.org, <http://www.epa.gov/owow/nps/lid/lidnatl.pdf> and <http://www.stormwatercenter.net/>.
- Maintenance of the natural hydrograph is needed to reduce downstream channel destabilization and bank erosion. Stormwater management ponds should be forested (excluding dams) with native plants to reduce thermal impacts to waters and to restore lost songbird habitats.
- Fill in Federal Emergency Management Agency designated floodplains as well as Clean Water Act jurisdictional water floodplains should be prohibited or no net loss strategies should be used. This is an essential and important maintenance component of stormwater management. Entire

floodplain areas should be protected as undisturbed forested areas to benefit local air and water quality as well as provide habitat values.

- Sediment and erosion controls should meet NC Division of Water Quality requirements for the classification of watersheds. Preferably, sediment and erosion control measures should adhere to the design standards for sensitive watersheds (15A NCAC 4B .0124).
- Please see the NCWRC website for additional insights about environmental and habitat concerns relative to indirect (secondary and cumulative) urbanization and development impacts at http://www.ncwildlife.org/pg07_WildlifeSpeciesCon/pg7c3_impacts.pdf. In addition, you may find <http://www.nwf.org> of interests as the National Wildlife Federation is very involved with climate change issues indicated to affect people and wildlife.

In conclusion, we will not object to the currently proposed 2.0 MGD expansion providing the enumerated recommendations indicated above are in place to protect and enhance ecosystem stability. During planning for any regional facilities, project proponents and all municipalities that will benefit from or use consolidated water and sewer services should provide equally protective ordinances that include actions necessary for restoring aquatic habitats in Dye Creek and the Rocky River as indicated in the bulleted items above. SCI issues and their mitigation will be paramount considerations for regional facilities that promote additional urbanization and the loss of rural lands. Such protective and restoration measures should exceed standard Phase II stormwater measures if water quality and aquatic habitat improvements are desired.

Thank you for the opportunity to review and comment on this project. If you have any questions regarding these comments, please contact me at 336/769-9453.

Attachments: General Guidelines for Environmental Reviews
Utility Line and Sewer Line Avoidance and Minimization Recommendations

General Guidelines for Environmental Reviews

Due to staff limitations, this standardized response was developed. Although some of the information, requests and comments may not be applicable to certain projects, these guidelines should facilitate preparation of fish and wildlife Environmental Assessments (EA) or Environmental Impact Statements (EIS). In addition to addressing site specific concerns, the environmental document should include a detailed assessment of existing natural resources within the areas of potential development and should discuss the potential of mitigating development impacts to wetlands, streams and high quality floodplain and upland habitats. To provide a meaningful review of the EA or EIS prepared for the project(s) secondary and cumulative impacts, we request that project consultants and sponsors provide the following information:

- 1) Project proponents should provide equal attention to direct project impacts and indirect impacts that the project will precipitate.
- 2) Description of waters and/or wetlands affected by the project(s). Description of fishery and wildlife resources within the project area, including a listing of federally or state designated threatened, endangered, or special concern animal and plant species in the project area and any areas that may be impacted by secondary or cumulative impacts within the affected sub-basin(s). A listing of designated species can be developed through consultation with the North Carolina Natural Heritage Program or the US Fish and Wildlife Service.
- 3) Project map identifying wetlands and intermittent as well as perennial streams in the area. Identification of wetlands may be accomplished through coordination with the U.S. Army Corps of Engineers. If the Corps is not consulted, the person delineating wetlands should be identified and criteria listed.
- 4) Description of activities that will occur within streams and wetlands, such as fill or channel alteration. Acreage of wetlands impacted and linear feet of stream channels to be relocated, channeled, culverted or disturbed by some other means by alternative project designs should be listed.
- 5) Description of project site and non-wetland vegetative communities.
- 6) Description and cover type map showing acreage of upland wildlife habitat impacted by the project.
- 7) Discuss the extent to which the project(s) will result in loss, degradation, or fragmentation of wildlife habitat.
- 8) Discuss any measures proposed to avoid or reduce impacts of the project or to mitigate for unavoidable habitat losses.

- 9) Discuss the cumulative impacts of secondary development facilitated by the proposed utility improvements and any interrelated infrastructure projects, especially the impacts to water quality and habitat in the impacted watershed(s). Such discussion should weigh the economic benefits of such growth against the costs of associated environmental degradation.
- (a) Include specific measures that will be used to address stormwater at the source. Include specific requirements for both residential and industrial developments and BMPs that will be required.
- (b) Include specific measures that will be used to protect stream corridors, riparian habitat and a minimum of a 100-year floodplain. Since all streams have floodplains, it is important to avoid fill in active floodplain areas, not just the 100-year floodplain.
- (c) Include specific measures that will be implemented to promote water conservation and wastewater reuse.
- (d) Include a discussion of any other local ordinances or programs (e.g., industrial pretreatment, infiltration and inflow management, farmland preservation, habitat restoration/preservation, and recycling) that will mitigate the impacts of development.
- 10) Discuss the use of any mitigation, preservation, deed restrictions, and conservation plans and management objectives. These should include detailed site descriptions and maps. A determination concerning which agency or entity (e.g. land conservancy) will own and manage the easements or property should be included.

Note: A list of document preparers should be provided that provides each individual's professional background and qualifications.

Utility Line and Sewer Line Avoidance and Minimization Recommendations

Measures to avoid or minimize impacts to sensitive resources, including wetlands, should be implemented during all phases of construction associated with the area. Where impacts to wetlands (and waters) are unavoidable, we will recommend mitigation of the losses. In addition to providing wildlife habitat, wetland areas perform the important functions of flood control and water quality protection. Whenever possible, utility lines should be placed along existing right-of-ways along roads and previously impacted corridors. Pumping may be economically feasible where direct or secondary impacts can be avoided in sensitive habitats. To avoid or minimize stream and wetland impacts during construction of utility lines, we offer the following non-prioritized general recommendations that should be incorporated into project plans:

- 1) Construction corridors should be no wider than absolutely necessary. The 401 certification for Nationwide 12 stipulates that wetland construction corridors are not to exceed 40 feet and permanent maintained corridors are not to exceed 10 feet except at access points. The NC Division of Water Quality's 401 Certification for utility lines should be followed specifically for all jurisdictional impacts. Where crossings are necessary, sewer lines should cross streams at right angles to minimize impacts to riparian areas. Restored streams and stream banks should be planted with autochthonous (native) plants like silky dogwood, rhododendron, dog hobble, red maple, silky willow, tag alder, black willow, sycamore, river birch, or other native woody species. Riprap may be used to stabilize the bank in the area of the ordinary high water stage and vegetation (bioengineering) should be used above this stage. Aquatic life passage must not be hindered during low flows upon project completion. Directional boring is the preferred method of crossing jurisdictional waters and wetlands.
- 3) Utility lines crossing streams should be buried in the stream bottom or attached to existing bridges to maintain fish movement upstream and downstream and prevent debris from collecting at the pipe and causing a hydrologic change. We do not recommend installing piers in a stream channel to support a sewer line.
- 4) If concrete will be used, work must be accomplished so that wet concrete does not contact stream water. This will lessen the chance of altering the stream's water chemistry and causing a fish kill.
- 5) An undisturbed buffer zone should be left between streams and all construction. We prefer a buffer zone of at least 100 feet to control sedimentation into streams, provide shade, and maintain a travel corridor for wildlife. Buffers should also be left along intermittent drains or streams. To the maximum extent practicable, utility lines should be located on the edge of floodplains and away from riparian areas, wetlands and streams.
- 6) Temporarily disturbed wetlands should be reseeded with annual small grains appropriate for the season (e.g. annual oats, millet, or wheat) and be allowed to revert to native natural wetland vegetation.

- 7) A portion of the upland right-of-way (minimum of one acre) should be planted with native warm season grasses ladino clover, and/or partridge pea to provide food and additional habitat for wildlife. Autochthonous plants should be used to the maximum extent practicable. Routinely grown agricultural annual plants like oats, wheat or barley are acceptable for temporary nursery cover.
- 8) Slash and/or large trees available form corridor construction through forested and stream corridors should be placed along the permanent right-of-way in the form of brush piles and downed logs to provide cover and nesting habitat for wildlife.
- 9) If necessary, ROW areas should be mowed not more than once every two (2) to three (3) years. Mowing should occur between mid-March and mid-April to avoid disturbing wildlife utilizing the project corridor during the critical stages of nesting and rearing as well as to ensure winter cover.
- 10) Stringent erosion control measures should be implemented where soil is disturbed and maintained until project completion.
- 11) Temporary or permanent herbaceous vegetation should be planted on all bare soil within five (5) to ten (10) days of ground disturbing activities to provide long-term erosion control. We prefer a "seed as you go" strategy rather than allowing a large area to remain bare.
- 12) To repeat an important point, all utilities should be located away from stream banks and riparian buffer zones. Running these along floodplain edges and contours should be accomplished whenever possible.