NORTH CAROLINA DIVISION OF WATER QUALITY CONSTRUCTION GRANTS & LOANS SECTION

SUBMITTAL GUIDANCE FOR PLANS AND SPECIFICATIONS OF PROJECTS FUNDED THROUGH CG&L

March 2008

For any project that requires review under the State Environmental Policy Act (SEPA) a permit cannot be issued, nor can plans and specifications be approved, prior to the completion of a State Clearinghouse advertisement period for a FNSI, EIS, etc. unless the project qualifies for a Determination of Minor Construction Activity. However, we are willing to receive documents that are otherwise complete and initiate review of the plans and specifications after a FNSI, EIS, etc. has been **submitted** to the Clearinghouse. Any submittals that are incomplete may be returned.

A. Applications

The appropriate application (**in duplicate**), with any associated application fee, must be submitted with the plans and specifications.

- Authorizations to Construct at NPDES facilities: use NCDWQ ATC Application August 2007. No application fee is required.
 Note: Any sewerage collection, spray irrigation, or reclaimed water facilities associated with an Authorization to Construct must be accompanied by a separate permit application and fee as applicable under Sections A.2, A.3, and/or A.4 below.
- Pump stations, force mains, gravity sewers: use Form: PSFMGSA 03/08. Also provide the completed Watershed Classification Form: WSCAS 12-07. The application fee is \$480. For gravity sewers you are strongly encouraged to design them using the Minimum Design Criteria for Gravity Sewers. For pump stations and force mains we encourage you to use the Minimum Design Criteria for Pump Stations and Force Mains. Note: The Construction Grants and Loans Section does not accept Fast Track Applications.
- 3. Wastewater irrigation facilities: use the Wastewater Irrigation System Form: WWIS 12-06 or High-Rate Infiltration System Form: HRIS 12-06. For a facility irrigating 10,000 gallons per day or more, the original permit application fee is \$1,310. To modify a similar existing permit requires an application fee of \$395. For a facility irrigating less than 10, 000 gallons per day, the original application fee is \$810. To modify an existing permitted facility where the existing and newly permitted capacity remains under 10,000 gallons per day, the application fee is \$245.
- 4. **Reclaimed water generation, distribution, and utilization**: use Reclaimed Wastewater Conjunctive Systems Form: RWCS 12-06, Reclaimed Water Distribution Systems Form: RWDS 12-06, or Reclaimed Water Non-Conjunctive Systems Form: RWNCS 12-06. For

a facility generating, distributing or, irrigating 10,000 gallons per day or more, the original permit application fee is \$1310. To modify a similar existing permit requires an application fee of \$395. For a facility generating, distributing or, irrigating less than 10,000 gallons per day, the original application fee is \$810. To modify an existing permitted facility where the existing and newly permitted capacity remains under 10,000 gallons per day, the application fee is \$245.

B. <u>Plans</u>

Two sets of plans should be submitted for review.

All plan sheets must be signed and sealed by a professional engineer licensed to practice in the State of North Carolina.

All property lines, permanent easements, construction easements, and rights-of-way must be shown on the plans. An easement is required for the crossing of all navigable waters of the State. This easement is obtained from the North Carolina State Property Office in the Department of Administration.

For gravity sewers and force main line work, all wells within 125 feet of the project must be shown on the plans for all projects.

For earthen-lined treatment facilities, irrigation sites, or disposal sites are involved, information on the location, construction details, and primary usage (drinking water, process water, monitoring, etc.) of all wells within the 500 feet must be provided.

For all wastewater treatment facility projects, all houses and places of public assembly within 100 feet of the project must be shown on the plans.

For lagoon and irrigation facilities all houses and places of public assembly within 400 feet of the project must be shown on the plans.

Plan sheets must be provided for all applicable disciplines associated with the proposed project, including:

- Civil
- Structural
- Electrical
- Instrumentation (If applicable)
- HVAC (If applicable)
- Plumbing (If applicable)

Clearly illustrate and delineate all wetlands, water courses, and drainage features within 50 feet of all sewer/pipeline and wastewater treatment projects. For irrigation projects these delineations should extend to within 100 feet of the project. Identify on the plans each water body's watershed classification.

Construction of sewers and sewer extensions is prohibited in the following areas unless the specified determinations are made:

- In a natural area designated on the State Registry of Natural Heritage Areas by a protection agreement between the Owner and the Secretary of the North Carolina Department of Environment and Natural Resources, unless the EMC agrees that no prudent, feasible, or technologically possible alternative exists.
- In a natural area dedicated as a North Carolina Nature Preserve by mutual agreement between the Owner and the State of North Carolina (Governor and Council of State), unless the EMC recommends and the Governor and Council of State agree that no prudent, feasible, or technologically possible alternative exists.

Confirm that the construction corridors for the proposed sewers do not traverse the abovementioned natural areas.

Plans must clearly provide for reliability as required in 15A NCAC 2T. This includes multiple units and alternative power source.

All existing utilities should be shown on plans and in the profiles.

A North arrow should be shown for all plan views.

Clearly show how horizontal and vertical controls are provided.

Identify the 100 year flood elevation and the source of this information. One source can be found at <u>http://www.ncfloodmaps.com/</u>.

C. Specifications (Contract Documents)

Two sets of specifications should be submitted concurrently with plans for review.

The cover of the specifications must be signed and sealed by a professional engineer licensed to practice in the state of North Carolina.

For publicly owned facilities that must be formally bid the specifications should include the following items:

- Advertisement for Bids
- Information for Bids
- Bid
- Bid Bond
- Agreement
- Payment Bond
- Performance Bond
- Notice of Award
- Notice to Proceed

- Change Order Form
- General Conditions
- Special Conditions
- Technical Specifications
- SRF Special Conditions (SRF funded projects only)
- STAG Supplemental General Conditions (STAG funded projects only)

Gravity sewer work should be broken out in the bid form by unit price for various ranges of depth.

The Notice of Award and Notice to Proceed should have places for the signatures of the Contractor and the Local Government's Authorized Representative. The Consulting Engineer's signature is not considered an acceptable alternative for the signature of the Authorized Representative.

All projects are required to include the five MBE/WBE utilization forms. These forms and guidelines should be inserted in the contract documents, and the contractors should be required to complete the documents in accordance with the guidelines. Attachment No. 4 of the SRF Special Conditions includes additional requirements for documentation for SRF projects. Attachment No. 12 of the STAG Supplemental General Conditions includes additional requirements for documentation for SRF projects.

Dispute resolution must comply with G.S. 143-128(g). This statute allows the local government to create their own dispute resolution policy which includes mediation or they may use the dispute resolution policy adopted on February 26, 2002, by the State Building Commission (SBC).

The contract duration must be shown in the specifications.

The sequence of construction must be identified in the specifications. This sequence must not imply that the contractor is responsible for operation of treatment facilities and must not result in overflows or bypasses to waters of the state.

A reasonable subsurface investigation must be made available to the contractor. If it is not included in the specifications, the specifications must advise where a copy of the report can be observed. Boring about every 500 feet and at each road crossing for line work and at all major structures like pump stations, aeration basins, and clarifiers is expected. If this information is not made available to the contractor then change orders associated with differing site conditions may not be determined eligible for funding.

NCDOT encroachment agreements and railroad encroachment agreements must be provided in the specifications or it must be documented how all construction requirements associated with the agreements have been incorporated in the plans. Also see Section B regarding this issue.

When gas stations (existing or abandoned) are in the vicinity of the project an investigation of the soils and groundwater in the area should be performed to determine if contamination exists.

If so, plans and specifications must address how the contaminated soils and groundwater will be handled. Materials used in contaminated areas must be compatible with petroleum.

The scope of work outlined in the bid forms **must** match a take off from the plans.

The scope of work must match the scope of work outlined in the **approved** engineering report.

D. <u>Supplemental Documentation</u>

For **all funded** projects, provide a completed copy of the Plans and Specifications Submittal Checklist.

For STAG funded projects, provide a completed copy of the STAG checklist.

Provide an executed copy of any applicable inter-local agreements.

Provide an updated cost estimate.

Provide a certification signed and sealed by the professional engineer who sealed the plans and specifications that addresses compliance with GS133-3.

For **irrigation of treated effluent** projects, provide the following:

- Agronomist Report
- Soils Report
- Hydrogeologic Report
- Water Balance

Contact Ken Pohlig, Ph.D., P.E. at (919) 715-6221 to discuss report and water balance requirements.

It is preferable that the plans and specifications include all construction requirements associated with the other permits listed below, as applicable. Due to the long lead-time involved in obtaining some of these permits, the owner/engineer is encouraged to contact the agencies early in design. We can accept submittals without this information. However, we cannot approve the plans and specifications nor issue permits until this information is provided. If one of these permits is applicable but unavailable at the time of submittal please provide its status and a schedule for its receipt.

- 401 Water Quality Certification
- 404 Permit
- CAMA Permit
- CAMA Consistency Determination
- Dam Safety Permit
- DOT Encroachment Agreements
- Railroad encroachment Agreements
- Section 10 Permit
- Sedimentation and Erosion Control Permit

E. Design Calculations

All projects must be designed in accordance with the Division's Minimum Design Criteria for Gravity Sewers, Minimum Design Criteria for Pump Stations and Force Mains and 15A NCAC 2T (or any subsequent revisions).

The following design calculations should be provided, as applicable:

1. Collection Sewers

In cases where a new sewerage system will be connected to an existing system it must be demonstrated that the downstream receiving sewer has the capacity to pass **all existing peak flows and proposed peak flows,** whether actually tributary or allocated.

2. Raw Wastewater Pump Stations

- Provide net positive suction head calculations for suction lift pumps.
- Provide system head calculations. Draw the system head curve on the pump curve.
- Identify the impeller that was selected.
- Provide a water hammer analysis for all systems where the force main exceeds 2500 feet.
- Provide pump run time calculations and pump cycle time calculations.
- Demonstrate that the pump station can handle the peak flow with the largest pump out of service.

3. Hydraulic Profile Calculations

These calculations should start at the effluent and work backward through the treatment plant, identifying the normal water level at average daily flow, and the peak water level under peak hourly conditions with the largest train out of service.

4. Provide calculations for the sizing of each of the following unit processes, as applicable:

- Influent Flow Equalization
- Influent Pumping
- Bar Screens
- Grit Removal
- Flow Monitoring
- Primary Clarification
- Aeration Basins
- Blowers
- Secondary Clarifiers
- RAS Pumping
- WAS Pumping
- Internal Recycle Pumping
- Effluent Filters
- Disinfection
- Dechlorination
- Digestion

- Residuals Holding
- Residuals Dewatering

5. Buoyancy calculations for all structures.

6. Standby power sizing calculations.

7. Residuals Management Plan

A residuals management plan must be submitted for all treatment systems that generate residuals under any of the following situations:

- A new treatment facility is being proposed,
- A modified treatment facility is being proposed that results in increased capacity,
- A modification to the treatment facility is being proposed that results in an increase to the residuals yield, or
- A modification to the residuals train is being proposed.

The Residuals Management plan must include the following:

- a. A detailed explanation as to how the residuals will be stabilized. In addition, if the residuals are generated from a system treating sewage, the explanation must show that the stabilization process meets EPA's criteria for a Class B residual as defined in 40 CFR 503 or the Process to Significantly Reduce Pathogens (PSRP) as defined in 40 CFR Part 257 Appendix II which is hereby incorporated by reference including any subsequent amendments and editions.
- b. An evaluation of the residual storage requirements for the treatment facility. A minimum of 30 days storage will be required on all facilities, unless the applicant can demonstrate to the satisfaction of the Director that this requirement is unwarranted for a particular case. Storage shall be calculated based upon average residuals production rate and shall be units separate from the treatment system, i.e., not the clarifiers, aeration basins. Additional storage may be required based on the method of final disposal/utilization,
- c. A written commitment from the permittee of a Division approved residual disposal/utilization site for the acceptance of the residual and which demonstrates that the Division approved site has adequate capacity to accept the residuals.