



☒ North Carolina Wildlife Resources Commission ☒

Gordon Myers, Executive Director

MEMORANDUM

TO: Lyn Hardison, Environmental Assistance Coordinator
NCDENR Division of Environmental Assistance and Outreach (DEAO)

FROM: Shannon L. Deaton, Program Manager *Shannon Deaton*
Habitat Conservation Program

DATE: 12 February 2013

SUBJECT: NEPA Environmental Assessment for Wastewater Treatment and Collection System Improvements, City of Creedmoor, Granville County, DENR Project No. 13-0259.

Biologists with the North Carolina Wildlife Resources Commission (NCWRC) have reviewed the subject document and we are familiar with the habitat values of the area. Our comments are provided in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667e), North Carolina General Statutes (G.S. 113-131 et seq.), and North Carolina Administrative Code 15A NCAC 10L0102.

The City of Creedmoor proposes to construct a new 1.15 million gallon per day (mgd) Five Stage BNR type wastewater treatment plant and effluent transport system with an effluent discharge to Tar River at Cannady Mill Road. The purpose of the proposed project is to provide adequate wastewater treatment and disposal facilities to support the 20-year projected growth in the City of Creedmoor's service area.

There are records for the federally endangered dwarf wedgemussel (*Alasmidonta heterodon*); the state endangered yellow lance (*Elliptio lanceolata*), Atlantic pigtoe (*Fusconaia masoni*), yellow lampmussel (*Lampsilis cariosa*) and green floater (*Lasmigona subviridis*); the state threatened Carolina madtom (*Noturus furiosus*); the state significantly rare Roanoke bass (*Ambloplites cavifrons*) and pinewoods shiner (*Lythrurus matutinus*); the state threatened triangle floater (*Alasmidonta undulata*), Roanoke slabshell (*Elliptio roanokensis*), and creeper (*Strophitus undulatus*); and the state special concern North Carolina spiny crayfish (*Orconectes [Procericambarius] carolinensis*) and notched rainbow (*Villosa constricta*) in Tar River. Also, there the Significant Natural Heritage Areas – Upper Tar River Aquatic Habitat, Tar River/Triassic Basin Floodplain, and Tar River/Wilton Slopes – are located near the proposed wastewater treatment plant and discharge.

The no-action alternative was evaluated along with optimum operation of the existing facilities; reclaimed wastewater reuse; developing a centrally managed small clusters of individual facilities; discharging 1.15 mgd to SGWASA in the Neuse River Basin; discharging 1.15 mgd to Ledge Creek or

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Whitaker Branch in the Neuse River Basin; discharging 550,000 gpd to SGWASA in the Neuse River Basin and land application of 600,000 gpd; discharging 1.15 mgd by land application; discharging 1.15 mgd to Oxford WWTP; discharging 1.15 mgd to Raleigh WWTP; and discharging 1.15 mgd to Tar River near Cannady Mill Road. The preferred alternative is discharging 1.15 mgd to Tar River near Cannady Mill Road.

We have significant concerns regarding the direct impacts of the proposed wastewater discharge to Tar River near Cannady Mill Road. The NCWRC continues to support a wastewater discharge to the Neuse River basin. Discharging wastewater to the Neuse River basin would avoid direct impacts to dwarf wedgemussel populations, as well as the other rare and sensitive species found in Tar River. Also, it would avoid the need for an interbasin transfer of water from the Neuse River basin to the Tar-Pamlico River basin.

The process used to select the Tar River discharge as the preferred alternative is unclear. The EA states the alternative to discharge 1.15 mgd to SGWASA is not feasible due to insufficient capacity to meet the City of Creedmoor's projected wastewater needs. The SGWASA wastewater treatment plant (WWTP) is currently permitted for 5.5 mgd. According to the EA, based on best available treatment technology, to meet the Falls Water Supply Nutrient Strategy rule, the capacity of the WWTP is reduced to 2.455 mgd and 2.063 mgd to meet Stage I and Stage II total nitrogen reductions, and 4.083 mgd and 1.724 mgd to meet Stage I and Stage II total phosphorus reductions. However, the EA indicates one of the reasons the alternative to discharge wastewater to SGWASA is not feasible is because significant capital and annual operation and maintenance costs associated with implementation of necessary improvements (providing tertiary treatment such as membrane filtration and reverse osmosis processes) to comply with the Stage I and Stage II nutrient allocations included in the Falls Water Supply Nutrient Strategy rule.

It is unclear whether the alternative to discharge 1.15 mgd to SGWASA is limited by available technology, or the cost of upgrading the existing facility to meet the nutrient allocations required by Stage I and Stage II of the Falls Water Supply Nutrient Strategy rule. The EA should include a discussion on upgrading the SGWASA WWTP with tertiary treatments that would meet the Stage I and Stage II nutrient allocations included in the Falls Water Supply Nutrient Strategy rule, how the upgrade with tertiary treatments would affect the WWTP's capacity (e.g., mgd), and the cost of upgrading the facility. Also, the discussion should include the use of other types of wastewater treatment (e.g. constructed wetlands) used in conjunction with the SGWASA WWTP (with and without tertiary treatments) to provide additional nutrient reduction in the effluent.

If a discharge to Neuse River basin is not technologically feasible to meet the Falls Water Supply Nutrient Strategy rule, then our preference for a wastewater discharge to the Tar River includes the following.

1. Discharge to Cedar Creek through the Franklin County WWTP – Although dwarf wedgemussel are found in Cedar Creek, the impacts of a wastewater discharge on the dwarf wedgemussel population would be significantly less with a discharge to Cedar Creek than a discharge to Tar River at Cannady Mill Road. Also, Cedar Creek confluent with Tar River downstream of Tabbs Creek, another known location for a significant population of dwarf wedgemussel. We recommend this alternative is evaluated and included in the Environmental Assessment's (EA) alternatives analysis.
2. Discharge to Tar River below Tabbs Creek – Again, a wastewater discharge to Tar River below the confluence of Tabbs Creek would reduce impacts to the dwarf wedgemussel population in the Tar River. We recommend this alternative also is evaluated and included in the EA's alternatives

analysis.

3. Discharge to Fishing Creek through Oxford WWTP – This discharge is located upstream of the proposed discharge on Tar River at Cannady Mill Road; however, this WWTP does not discharge directly into habitat that supports dwarf wedgemussel. Also, there is the potential for greater dilution and assimilation of harmful constituents in wastewater before Fishing Creek confluences with Tar River.
4. Discharge to Tar River at Cannady Mill Road – If this continues to be the preferred alternative, then for NCWRC to concur with a Finding of No Significant Impact the following measures would need to be implemented. If an acceptable mitigation plan that will reduce impacts to a level below the threshold of significance cannot be agreed upon, then we recommend an Environmental Impact Statement be developed.

- Ammonia – Develop site-specific acute (short-term) and chronic (long-term) water quality standards for ammonia to protect the sensitive mussel species, particularly dwarf wedgemussel in Tar River. The site specific standard should be developed using the process described in Appendix A of the *Technical Support Document for Consideration of Federally-listed Threatened or Endangered Aquatic Species in Water Quality Management Planning for the Goose Creek Watershed* that was prepared by an interagency team of NCWRC, U.S. Fish and Wildlife Service (USFWS), and N.C Natural Heritage Program (NCNHP).

The acute and chronic ammonia standard must be met in the effluent (or end-of-pipe), not at the 7Q10 flow. Tar River often has extended periods when the flow is below the 7Q10, and on occasion the flow is zero. For example, in 2007 the stream flow data at the USGS Tar River nr Tar River stream gage (02081500) located upstream of the proposed discharge showed flows were less than the 7Q10 from 21 July to 24 October; between 7 Sept and 24 October stream flow was zero. From 2008 and 2012, the number of days the flow was below the 7Q10 ranged from 16 (2009) to 52 (2011); the duration that flows remained below the 7Q10 ranged from approximately one week up to nearly one month.

The site-specific acute and chronic water quality standards for ammonia should be included in the EA, and there should be a discussion as to whether these would be achievable in the effluent for the proposed wastewater discharge to Tar River. Although the EA provides a detailed discussion of ammonia levels relative to the 7Q10 flow of 1.4 cfs, it does not provide sufficient information regarding ammonia levels when flows are below the 7Q10, and it does not provide a site-specific water quality standard for ammonia.

- Copper – Develop site-specific acute (short-term) and chronic (long-term) water quality standards for copper to protect the sensitive mussel species, particularly dwarf wedgemussel in Tar River. The site specific standard should be developed using the process described in Appendix B of the *Technical Support Document for Consideration of Federally-listed Threatened or Endangered Aquatic Species in Water Quality Management Planning for the Goose Creek Watershed*.

The acute and chronic copper standard must be met in the effluent (or end-of-pipe), not at the 7Q10 flow. The site-specific acute and chronic water quality standards for copper should be included in the EA, and there should be a discussion as to whether these would be achievable in the effluent for the proposed wastewater discharge to Tar River.

- Emerging Contaminants – Pharmaceuticals and Personal Care Products (PPCP) and Endocrine Disrupting Compounds (EDC) – Studies have shown pollutants in municipal wastewater effluent can cause adverse physiological effects in freshwater mussels including endocrine or neuroendocrine disruption (Quinn et al. 2004, Gagné et al. 2011a), modulated DNA synthesis and repair mechanisms (Gagné et al 2011b), immune system disruption or

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modulation (Bouchard et al. 2009, Farcy et al. 2011), and reproductive system disruption (Bouchard et al. 2009, Bringolf et al. 2010). Wastewater treatment plants should be designed with technology that is known to reduce or eliminate PPCPs and EDCs from wastewater. Some measures that appear to provide effective reduction or elimination of these emerging contaminants include membrane bioreactors, granular activated carbon, powdered activated carbon, ozonation, and combinations of these treatment technologies. The EA should provide a discussion on emerging contaminants, particularly PPCPs and EDCs, and the treatment measures that will be used in the WWTP to reduce or eliminate these from the effluent.

- Untreated or undertreated wastewater – The WWTP must include measures (e.g., flow equalization and offline storage) to ensure consistent effluent water quality and downstream protection from overflows. The WWTP should provide a minimum of five days of storage for untreated or undertreated wastewater. We are concerned about impacts to water quality, aquatic habitat, and aquatic species should treatment upsets occur particularly during low flow periods (e.g., 7Q10 or less). We have significant concerns about the potential impact to dwarf wedgemussel as a result of discharging untreated or undertreated wastewater. The EA should include a description of the measures that will be used to store untreated or undertreated wastewater, and measures used to ensure consistent effluent water quality and downstream protection from overflows.

Although the project proposes an interbasin transfer (IBT) of 1.15 mgd which is below the threshold for an IBT Certificate, we have overall concerns regarding a transfer of water from Neuse River basin to Tar-Pamlico River basin. It is unclear whether future growth beyond the 20-year projection period for this project would result in the need to expand the proposed wastewater treatment facilities and subsequently increase the IBT. The EA should provide a discussion of the anticipated build-out capacity, the potential for future IBT from the Neuse River basin to the Tar-Pamlico River basin, and potential need for an IBT certificate in the future.

We are concerned about the secondary and cumulative impacts resulting from development facilitated by the project. The EA provides a zoning map for the City of Creedmoor, but it is unclear whether this corresponds to the current and future service area for the proposed WWTP. The EA should include a figure or map that shows the current City limits and any extra-territorial jurisdictions (ETJ) that may be served by the proposed wastewater treatment facility. Also, a summary of the ordinances or protective measures as they pertain to riparian buffer; floodplain and open space protection; impervious surface limits and stormwater management; and sediment and erosion control should be included in the EA. Generally, it appears the City of Creedmoor allows floodplain development, implements the Neuse River riparian buffers, and stormwater management is through NPDES Phase II Stormwater or the Falls Water Supply Nutrient Strategy rule.

Additional impervious surface associated with development results in an increase in stormwater runoff that can exert significant impacts on stream morphology. This will cause further degradation of aquatic habitats through accelerated stream bank erosion, channel changes, bedload changes, altered substrates, and scouring of the stream channel. In addition, pollutants (e.g., sediment, heavy metals, pesticides, and fertilizers) washed from roads and urban landscapes can adversely affect and extirpate species downstream of developed areas. We encourage the City of Creedmoor to consider integrating additional measures to address issues of development and its impact on water quality and aquatic and terrestrial wildlife habitat before degradation of area streams occurs.

Adopting ordinances that protect wide forested riparian corridors and the 100-year floodplain along with adequately treating stormwater in development areas are essential to protect water quality and aquatic habitat in developing landscapes. NCWRC's *Guidance Memorandum to Address and Mitigate*

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Secondary and Cumulative Impacts to Aquatic and Terrestrial Wildlife Resources and Water Quality
(August 2002;

http://www.ncwildlife.org/Portals/0/Conserving/documents/2002_GuidanceMemorandumforSecondaryandCumulativeImpacts.pdf) details measures to address the secondary and cumulative impacts associated with this project and to reduce impacts to aquatic and terrestrial wildlife resources. Based on information provided in the EA it appears the current service area is located within the Neuse River basin. However, if portions of the service area will be within the Tar-Pamlico River basin, then the measures detailed under both "General Mitigation Measures for All Watersheds" and "Specific Mitigation Measures for Waters Containing Federally Listed Species" are applicable to those portions of the service area within the Tar River basin. Also, the Green Growth Toolbox (<http://216.27.39.101/greengrowth/>) provides information on nature-friendly planning.

We offer the following general recommendations to minimize direct impacts resulting from installation of sewer gravity lines and force mains.

1. Sewer gravity lines and force mains should follow existing road or utility rights-of-way, where feasible.
2. If sewer gravity lines or force mains will follow stream channels, then a minimum 100-foot undisturbed forested buffer should be maintained along each side of perennial streams and 50-foot undisturbed forested buffer should be maintained along each side of intermittent streams and wetlands or the 100-year floodplain, whichever is greater. In the Tar River watershed, due to the presence of dwarf wedgemussel, a minimum 200-foot undisturbed forested buffer should be maintained along each side of perennial streams, and a 100-foot buffer undisturbed forested buffer should be maintained along intermittent streams and wetlands, or the 100-year floodplain, whichever is greater.
3. All utility crossings should be kept to a minimum. The directional bore (installation of utilities beneath the riverbed, avoiding impacts to the stream and buffer) stream crossing method should be used for utility crossings wherever practicable, and the open cut stream crossing method should be used only when water level is low and stream flow is minimal. Manholes or similar access structures should not be allowed within buffer areas. Stream crossings should be near perpendicular (75° to 105°) to stream flow.
4. If open cut will be used to install sewer gravity lines or force mains on any perennial streams in the Tar River basin, then aquatic surveys should be conducted prior to any instream work. Surveys should be performed 100 meters upstream of the proposed crossing, within the proposed crossing, and 300 meters downstream from the proposed crossings. Surveys should be conducted by biologists with both state and federal endangered species permits. Qualitative mussel sampling should be conducted by visual (snorkel, SCUBA, or view scope) and tactile surveys and should be conducted during the period 1 April to 31 October. These surveys should be timed to provide catch-per-unit effort (CPUE). Specimens should be documented for identification confirmation with color digital photographs in JPEG format. The resource agencies should be provided a complete compilation of the results of the survey. If species with federal protection status are encountered, sampling activities should cease and findings should be immediately reported to the USFWS at (919) 856-4520 and Rob Nichols with NCWRC at (919) 896-6254.
5. Avoid the removal of large trees at the edges of construction corridors. Re-seed disturbed areas with seed mixtures that are beneficial to wildlife. Avoid fescue based mixtures because fescue is invasive and provides little benefit to wildlife. Minimize corridor maintenance and prohibit mowing between April 1 and October 1 to minimize impacts to nesting wildlife.

At this time, we cannot complete our review of the project due to the information needs listed above. However, we want to reiterate, we have significant concerns regarding a wastewater discharge to

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Tar River and its impact to the dwarf wedgemussel as well as other rare and sensitive species in the Tar River. We continue to support a wastewater discharge to Neuse River as the preferred alternative to avoid these impacts, and to potentially eliminate the need for a future IBT. We believe the applicant needs to demonstrate that a discharge to Neuse River basin is not technologically feasible before any alternatives for a discharge to the Tar River are considered.

Thank you for the opportunity to provide comment on this project. We look forward to reviewing the additional information. If we can be of further assistance, please contact our office at (336) 449-7625 or shari.bryant@ncwildlife.org.

Literature cited:

- Bouchard, B., F. Gagné, M. Fortier, and M Fournier. 2009. An in-situ study of the impacts of urban wastewater on the immune and reproductive systems of the freshwater mussel *Elliptio complanata*. *Comparative Biochemistry and Physiology Part C: Toxicology and Pharmacology* 150(2):132-140.
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