APPENDIX A

AGENCY COMMENTS

- Summary of Scoping Comments
- Agency Scoping Comments
- Summary of Draft Document Comments
- Agency Comments - May 2008
- Responses to September 2008 Agency Comments
- Agency Comments - September 2008
- USFWS Comments and Response on Preliminary Draft Document
- Agency Comments - January 2009
- Summary of Document Changes to Agencies – May 2009
- Agency Comments - June 2009
- Response to Agency Comments – June 2009
- Written Comments on Public Draft – August 2009
- Responses to Oral and Written Communications

Summary of Scoping Comments

Appendix A

Agency	Comment ID	Comment	Proposed Approach
DENR **Melba McGee**	1	Transportation plans and improvements should be added to the proposed workplan.	The City of Raleigh has no jurisdiction over transportation infrastructure in the merger communities. However, the City recognizes that transportation will cause growth. Thus, transportation infrastructure will be included in the SCI Management Plan as an appendix.
	2	The basic workplan that was developed for the Western Wake Partners SCIMPs should be followed, as the department thinks this approach addresses secondary and cumulative impacts in a much more comprehensive manner.	The City of Raleigh and merger communities do plan to follow the same process developed for the Western Wake communities. This process will follow an EIS process; a memorandum of agreement will be developed with NCDENR prior to the final SCI document being submitted to the State Clearinghouse.
DWQ Basinwide Planning Unit **Hanna Stallings**	1	Page 1 states that Raleigh will administer "all water and wastewater infrastructure of each of those municipalities [Raleigh and the Towns of Garner, Rolesville, Knightdale, Wake Forest, Wendell, and Zebulon], from sewer system upgrades and expansions to billing. New projects related to water and wastewater infrastructure in each of these municipalities are the responsibility of the City of Raleigh." Will the City cover the cost of these future projects or will the funding for a project in a certain area be covered solely by funds from that municipality?	Each of the merger communities purchased capacity in Raleigh's water and wastewater infrastructure. Some of this capacity may have been purchased up front; a portion may also be reflected in a higher water/sewer rate for merger communities for a given period of time. The City will cover the cost of future projects.
	2	Explain how the towns will regulate their own growth and have wholly independent ordinances while Raleigh exclusively administers the allocation of water and/or wastewater capacity and routing of the dependent utilities for each town. Each municipality, excepting Raleigh, wil not have the ability to entice the type development (especially industrial development) to meet its unique economic or social needs since they will not have control over their own infrastructure.	Each local government has purchased capacity in the City of Raleigh's utility systems. The local governments can allocate that capacity to residential, commercial or industrial growth. Growth rates for water and sewer use are included in the merger agreements. Long term, the local governments' growth rates are tied to the City of Raleigh's growth rate.
	3	Acknowledge that Zebulon also provides sewer service to the Town of Middlesex, which is in Nash County.	Zebulon does provide wastewater service to the Town of Middlesex in Nash County. However, Middlesex must develop the appropriate environmental documents for new infrastructure and will address all direct, secondary, and cumulative impacts in those documents.
	4	Page 2 states “It is anticipated that this SCI Management Plan will be applicable for a period of ten to fifteen years, and then will be updated. It is also anticipated that there will be an agreement with the NC Department of Environment and Natural Resources (DENR) which includes triggers that would necessitate earlier updates to the plan.” Since the details of the agreement are yet to be finalized, it would be more appropriate to say “The City of Raleigh has entered into an memorandum of agreement (MOA) with the Department of Environment and Natural Resources (DENR) that outlines how the SCI Master Mitigation Plan document will be used, the time period during which it can be cited in individual EAs and EISs, and under what circumstances it must be updated more frequently.”	The City of Raleigh has not yet entered into an MOA with DENR. The City plans to follow the process that was developed between DENR and the Western Wake communities which includes an MOA. DENR's SEPA Coordinator has provided comments supporting this approach.

Appendix A

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	5	Page 2 states that "SCI are directly tied to changes in land use." Page 5 states "Cumulative impacts from the construction of I-540 will be examined from existing NCDOT and other state agency NEPA/SEPA documentation related to I-540." The secondary impacts from transportation projects will occur before the cumulative impacts of such a project. Therefore, please acknowledge that transportation projects also lead to SCI since they typically secondarily and cumulatively result in changes in local land use patterns. Also, consider the affects of installation of water and wastewater infrastructure when combined with the affects of future transportation projects may result in cumulative impacts.	Transportation can cause secondary and cumulative impacts in an area, and Section 2 of the SCI document will recognize this.
	6	Page 4 has the anticipated infrastructure in three categories: water, wastewater, and reclaimed water. As quoted above, the scoping document states that it will cover "water and wastewater infrastructure. Please be clear on whether "wastewater infrastructure" also includes reclaimed water projects.	Reclaimed water will be discussed with wastewater. While reclaimed water does reduce potable water demands, it serves as a method to dispose of highly treated effluent.
	7	Since none of the watersheds appear to intersect among the separate municipalities and each municipality may have separate ordinances for managing their local environment for SCI impacts, it would seem that the SCI plan would be divided by the municipalities and not by separate watersheds. This is assuming that each municipality will continue to develop their own, unique ordinances that will be determined by Raleigh. However, DWQ does encourage a complete review and coordination of ordinances that equally protect the entire watershed across municipal boundaries.	We concur that the municipalities will have their own ordinances; thus the sections on mitigation and the section which ties impacts and mitigation will be addressed by local government. Since it is important to understand the current status of environmental resources by watershed, the section which describes the existing environment is done by watershed. A map which shows the watershed boundaries and local government boundaries will be included in the Plan.
	8	Page 4 states "Exact locations of the proposed infrastructure [within Raleigh's total service area] will be determined while the environmental documents examine the direct impacts are developed." The environmental review process is complete on at least two of the projects presented in the appendices. Please be more specific in your reporting.	There were projects in the CIP that had already completed the environmental documentation process. Where data are readily available, we will break out the infrastructure into existing and proposed.
	9	Page 4 states "There are currently projects under design to extend reclaimed water to Glaxo from the Little Creek WWTP in Zebulon and to the softball fields in Raleigh from the Neuse River WWTP." **a.** 'Glaxo' is now 'GlaxoSmithKline.' **b.** When should the projects to transmit reclaimed water to GlaxoSmithKline be completed? **c**. As local populations continue growing, more wastewater will be generated and more drinking water will be needed, and there will be continued water restrictions due to the lack of potable water. Therefore, the City should make use of more reuse wastewater. This effort will also reduce the amount of nutrients added back into the nutrient sensitive waters of the Neuse River Basin.	Any references to GlaxoSmithKline will be correct in the document. The City plans to bid the Zebulon reclaimed water system in May 2008 with a projected completion date of January 2010. The City concurs with the benefits listed for using reclaimed water and will continue to look for cost-effective reclaimed water use options.

Appendix A

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	10	Page 5 states potential impacts to threatened species will be considered in development of the SCI Plan. Please address that water and wastewater projects can have direct, secondary, and cumulative impacts on threatened species in the Plan.	Water and wastewater projects can have direct, secondary, and cumulative impacts on threatened species. However, this Plan will focus on the secondary impacts and indirect cumulative impacts (i.e. impacts associated with growth).
	11	In the proposed outline for "Description of Existing Environment in Planning Area" please change the label of "Prime or Unique Agriculture" to "Prime or Unique Agricultural Land" and add "Introduction of Toxic Substances"	The suggested changes will be incorporated into the Plan.
	12	Stormwater does substantial and generally irreversible damage to aquatic environment.	
		a. Streams in the Plan's area that are not presently impaired by stormwater should be targeted for protection measures to prevent their degradation.	The stormwater programs will be summarized in the draft Plan.
		b. Please provide additional information to help clarify the application of the numerous stormwater programs.	The stormwater programs will be summarized in the draft Plan.
		c. It would be practical for future planners and engineers if the SCI Plan contained a detailed assessment of the various stormwater and buffer requirements that are in effect for individual watersheds covered by the plan.	The SCI plan will contain summary tables of ordinances (including stormwater and riparian buffer). In addition, actual ordinance language will be included on a CD in an appendix.
	13	CORPUD should utilize "Swimming with the Current," a guide to help municipalities protect their aquatic ecosystems while streamlining the environmental review process. Please make note of the NC WRC "Guidance memorandum to address and mitigate secondary and cumulative impacts to aquatic and terrestrial wildlife resources and water quality" as this document will assist in the mitigation of impacts to water quality, to fish and wildlife and their habitat generally, and in situations where federally threatened and endangered species exist.	"Swimming with the Current" will be reviewed when drafting the Plan. See responses to WRC comments.
NHP **Sarah McRae**	1	Concerned about impacts to significant natural heritage areas as well as impacts to sensitive and rare species and communities.	The significant natural heritage areas and rare species will be noted in the document. Any programs to protect them will also be summarized.
	2	NHP is concerned with the 10-15 year time period in which the document will be valid. Periodic reports should be submitted to document any additions, deletions, or changes to proposed infrastructure projects or mitigation measures. NHP recommends that there should be a provision that allows the plan to be re-evaluated if significant changes in the populations of rare species are observed.	The City will work with DENR to develop a Memorandum of Agreement on how the SCI Plan will be used, periodic reporting requirements, how often it should be updated, and under what circumstances it should be updated more frequently. This MOA will be finalized prior to the Plan being finalized.
	3	Address transportation plans and improvements.	The City of Raleigh has no jurisdiction over transportation infrastructure in the merger communities. However, the City recognizes that transportation will cause growth. Thus, transportation infrastructure will be included in the SCI Management Plan as an appendix.
	4	Address all issues set forth in the NC WRC "Guidance memorandum to address and mitigate secondary and cumulative impacts to aquatic and terrestrial wildlife resources and water quality."	See responses to WRC comments.
	5	Mirror documents prepared by Cary, Apex, Holly Springs, and Morrisville as much as possible.	The process developed between DENR and the Western Wake communities will be followed, and the draft plans will mirror them as much as possible. Some changes will be necessary since Raleigh's document will include the six merger communities.

Appendix A

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NC Division of Forest Resources Michael Mann	1	List, by timber type, the total forest land acreage that is removed or taken out of forest production as a result of the project. If no impacts will occur please state so in the document.	Individual environmental documents will specifically identify the direct impacts on forest land acreage and timber type. This document focuses on secondary impacts. In general, changes in land use will be noted, but specific timber types removed will not be noted.
	2	Note the provisions the contractor will take to utilize the merchantable timber removed during construction. Emphasis should be on selling all wood products. however, if the wood products cannot be sold then efforts should be made to haul off the material or turn it into mulch with a tub grinder.	This is a direct impact that will be addressed in the environmental document for a given infrastructure project. This Plan focuses on secondary and cumulative impacts of all infrastructure.
	3	If woodland burning is needed, the contractor must comply with the laws and regulations of open burning as covered under G.S. 113-60.21 through G.S 113-60.31. Wake County is classified as a non high-hazard county, and G.S. 113-60.24 requiring a regular burning permit applies.	This is a direct impact that will be addressed in the environmental document for a given infrastructure project. This Plan focuses on secondary and cumulative impacts of all infrastructure.
NC Wildlife Resources Commission Shari L. Byrant	1	Periodic reports should be submitted to document any additions, deletions, or changes that may occur to infrastructure projects or mitigation measures detailed in the plan.	The City will work with DENR to develop a Memorandum of Agreement on how the SCI Plan will be used, periodic reporting requirements, how often it should be updated, and under what circumstances it should be updated more frequently. This MOA will be finalized prior to the Plan being finalized.
	2	There should be a provision that allows the plan to be re-evaluated and updated if significant changes in aquatic or terrestrial wildlife populations are observed.	The City will work with DENR to develop a Memorandum of Agreement on how the SCI Plan will be used, periodic reporting requirements, how often it should be updated, and under what circumstances it should be updated more frequently which could include changes in aquatic or terrestrial organisms. This MOA will be finalized prior to the Plan being finalized.
		The plan should include:	
	3	A detailed listing of all existing and future infrastructure projects (including transportation) within the service area including figures detailing the location of the infrastructure.	A map where the GIS layers are available will be included that shows the locations of future infrastructure. It should be noted that these are plans, and exact locations of infrastructure will not be known until permitting and design phases.
	4	Detailed information on existing and future natural areas within the service area including figures detailing locations.	As detailed a listing of existing and future natural areas, parks, greenways will be included; maps will be included where GIS layers are available. It should be noted that these are plans, and exact locations of parks and greenways could be changed.
	5	Three maps detailing environmental features, existing land use, and future land use within the service area, similar to the maps found in the Town of Cary's SCIMP.	Maps similar to those included in the W. Wake Plans will be included.
	6	Two tables detailing land use type for existing and future land use. For each land use type include total square miles of the service area, percent of the service area, percent imperviousness, and impervious square miles.	Tables summarizing existing and future land use will be included. The City and merger communities have already been discussing a consistent land use coding methodology for use in the Plan.
	7	Information on the average percent imperviousness for the existing and future service area. Discuss the impact increased impervious surface will have on groundwater recharge and stream baseflow.	The percent imperviousness will be estimated based on literature values for the various land uses. The impact increased impervious surfaces has on groundwater and stream baseflow will be summarized in general terms.

Appendix A

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	8	A listing of all streams within the service area and the DWQ classification for each stream. Note whether any streams are on the 303(d) list of impaired waters. Include any proposed measures to improve water quality in impaired streams.	All major streams will be discussed in the document along with their stream classification and use support rating. All 303(d) streams will be noted. The City and merger communities will work with DENR on TMDL strategies to address impaired streams.
	9	NC GAP habitat land cover for the service area.	The NC GAP data were not yet available.
	10	Detailed information regarding current measures and any proposed measures to mitigate secondary and cumulative impacts facilitated by additional development. We are particularly interested in measures related to riparian buffer, floodplain and open space protection; impervious surface limits and stormwater management; and sediment and erosion control.	Ordinances related to riparian buffer protection, floodplain protection, open space protection, and stormwater management will be summarized in the main body of the document. Specific ordinance language will be included on CD in an appendix.
	11	The mitigation plan should outline current and proposed measures to mitigate SCI issues. Letter from NCWRC includes **8 Recommendations** to help address secondary and cumulative impacts associated with the proposed infrastructure projects and to reduce impacts on fish and wildlife resources.	
		1- NCWRC recommends the maintenance or establishment of a minimum 100-foot native forested buffer along each side of perennial streams and 50 foot native forested buffer along each side of intermittent streams and wetlands throughout the present and future service areas or the entire municipal jurisdiction. Ephemeral streams should also be buffered. Buffer width should be measured horizontally.	All local governments in the service area require riparian buffers which vary in width and include a forested zone near the stream, and a grassed zone further from the stream. Many scientists believe that including buffer zones that include forested and grassed areas are desirable as the grassed zone help maintain the integrity of the buffer by encouraging sheet flow and preventing rill/gully erosion. DWQ has convened two workgroups that included representatives of the scientific community to review riparian buffer widths. These groups have recommended a two zone buffer and a total width of 50 feet to help reduce nutrient and sediment loading, the most important pollutants to address within Raleigh and surrounding communities.
		2- Recommends that delineation of streams be conducted for the municipal service area according to USACOE or NCDWQ.	The City and merger communities use a combination of USGS maps and soil survey maps to determine whether a stream exists. DWQ's methodology for stream determination is followed when a developer questions whether a stream exists and if it is perennial or intermittent. The local governments have not delineated streams within their jurisdiction.
		3- Recommends the sewer lines, water lines and other utility infrastructure be kept out of riparian buffer areas. Crossings should be near perpendicular.	Sewer lines, water lines and other utility infrastructure will be kept out of riparian buffer areas to the maximum extent practicable. Crossings will be near perpendicular.
		4- 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. Herbicides and pesticides should not be used in wetlands or near streams.	The City of Raleigh will reseed disturbed construction ROW corridors with seed mixes that are beneficial to wildlife to the maximum extent practicable. Where feasible, the City will not use herbicides and pesticides near streams. Seeding and ROW requirements maintenance will be discussed with the local governments that maintain control of their disturbed construction ROWs/corridors.
		5- Recommends that the local governments prohibit commercial or residential development within the 100-year floodplain. Infill development should be encouraged.	The local floodplain protection ordinances vary and will be described in the SCI Management Plan. All local government ordinances meet FEMA requirements.

Appendix A

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		6- Recommends that the local government limit impervious surfaces to less that 10% of the watershed. Also recommends that the local government provide for sufficient open space to effectively reduce impervious surface so that predevelopment hydrographic conditions are maintained, limit curb and gutter in new developments, and prevent direct discharges of stormwater into streams.	Limiting impervious area to 10 percent in all watersheds will result in sprawl and potentially cause greater environmental impact. Studies which show water quality degradation at 10 percent impervious have been completed in watersheds that have developed without stormwater controls. All towns have riparian buffer ordinances, and the Phase II post construction requirements apply throughout the Study Area. The City of Raleigh, Town of Garner and Wake County must also comply with the Neuse River stormwater rules which effectively require stormwater treatment when imperviousness approaches 15 percent.
		7- Use bridges for all permanent roadway crossings of streams and associated wetlands to eliminate the need to fill and culvert, where practicable. Where culverts used, they should be designed to allow for passage of aquatic organisms.	Bottomless culverts and other devices will be used to the maximum extent practicable.
		8- Recommends that municipalities incorporate the elements listed below into their erosion and sediment control plans: a) Minimize clearing and grading b) Protect waterways c) Phase construction for larger construction sites (>= 25 acres) d) Stabilize soils as rapidly as possible (<2 weeks) e) Protect steep slopes f) Establish appropriate perimeter controls g) Employ advanced settling devices h) Implement a certified contractors program i) Regularly inspect erosion control measures	The City and Wake Forest have their own erosion and sediment control programs which exceed state requirements. Wake County implements the program for the other merger communities, and they also exceed
		Specific Mitigation Measures for Waters Containing Federally Listed Species	
	13	Federally endangered and threatened species are particularly affected by secondary and cumulative impacts associated with urban development due to sensitivity to habitat degradation and resulting high probability of extirpation. For those watersheds that support the dwarf wedgemussel and/or Tar spinymussel, the following additional conditions shall be followed:	The remainder of the comments from Wildlife Resources Commission apply to watersheds that provide aquatic habitat for federally endangered and threatened species. In general, the comments highlight the need to protect habitat and control stormwater runoff - through avoidance, minimization, erosion and sediment control, and BMPs. A wide range of approaches have been utilized to protect habitat for endangered mussel species and DWQ is currently in the process of adopting rules specifying protection requirements in certain watersheds. As we review the data available on the watersheds with endangered species issues for this SCI Plan and the mitigation programs in place in them, we will be mindful of need to protect endangered and threatened species' habitat and work with the wildlife agencies during the process.

Appendix A

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		Stormwater	
		1- Permits for new developments exceeding 6% imperviousness shall be required to include stormwater controls designed to replicate and maintain the hydrographic condition at the site prior to the change in landscape and at a minimum include provisions that satisfy WS II-HQW minimum standards. This can be achieved through a variety of measures. 2- A 200-foot native, forested buffer on perennial streams and a 100-foot forested buffer on intermittent streams, or the full extent of the 100-year floodplain, shall be required for new developments. 3- Grassed swales shall be used in place of curb and gutter for new developments, except in areas with >5% slope. Implement best management practices to minimize the effect of stormwater runoff entering the riparian buffer areas. In areas with slopes >5%, stormwater collected in piped conveyance systems shall be directed away from surface waters and best management practices shall be employed at both the intake and the outlet areas. Curbs and gutters may be used in combination with sidewalks in areas where clustering of uses increases the net local density to a level greater than 4 dwelling units per acre. 4- Direct discharges of stormwater to streams should not be allowed. Effective energy dissipation at the pipe outlet shall be accomplished to prevent scour of the stream channel and buffer. Stream habitats are maintained most effectively when stormwater runoff is dispersed through a vegetated or grassed buffer zone prior to entering the riparian buffer. The ditching or piping of the stormwater except when used in combination with grassed swales, level spreaders and check dams shall not be allowed in the riparian buffer. At no time should any mandated vegetated buffer zone be used for these engineered devices. 5- Emergency management procedures shall provide for the containment of runoff from fighting residential, commercial or industrial fires and for the removal and clean up of any hazardous spills that may endanger nearby streams.	
		Wastewater infrastructure	
		1- Force mains should be used to the greatest extent practicable. Gravity sewer lines shall be installed to follow along the outside of the 100-year floodplain contour unless topographic features, existing development, or other conditions restrict this technique. 2- Public and private sewer lines adjacent to streams shall parallel streams and be sited as far as practicable from stream and tributary corridors. A minimum of 200-foot buffer shall be provided for perennial streams and a 100-foot buffer for intermittent streams. Sewer lines close to streams shall be constructed of ductile iron. 3- No new sewer lines or structures shall be installed or constructed in the 100-year floodplain or within 50 feet of wetlands associated with a 100-year floodplain.	

Appendix A

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		4- Septic tanks, lift stations, wastewater treatment plants, sand filters and other pretreatment systems shall not be located in areas subject to frequent flooding (10-year storm). Mechanical or electrical components shall be above the 100-year flood level or otherwise protected against a 100-year flood.	
		5- Only aerial crossings elevated sufficiently to reduce the risk of flood damage or directional boring stream crossings shall be allowed. The placement of the crossing will be limited to major stream or creek confluences. Manholes or similar access structures shall not be allowed within buffer areas. Stream crossing areas shall be monitored once a quarter for maintenance needs.	
		Water and Utility Infrastructure (Electricity, Telecommunications, and Gas)	
		1- All water lines and utilities shall follow roads or meet the requirements associated with sewer line placements.	
		Maintenance of Rights-of-Way	
		1- Insecticides and herbicides shall not be used within 200 feet of streams, floodplains and associated wetlands except when needed to protect native flora and fauna from exotics and when using appropriately labeled products, such as biopesticides.	
		2- Native, forested plant communities shall be maintained within 200-foot buffer area of streams, floodplains and associated wetlands. A closed canopy will be maintained over streams. Emphasis will be place upon trimming trees instead of tree removal within 200 feet of streams, floodplains, and associated wetlands.	
		Sediment and Erosion Control	
		1- Locally enforced stringent erosion and sedimentation control requirements shall be developed and implemented for all construction. Erosion and sediment control program should be developed with state and federal agencies involved in aquatic species protection.	
		2- Fill or buildings shall not be allowed in the 100-year floodplain.	
		Additional Recommendations for Federally Listed Species	
		1- The local government shall solicit assistance and concurrence from resources agencies during the initial development and assessment of best management practices for stormwater management, sediment and erosion control, utility placement, etc	
		2- Maps shall be developed of the anticipated construction lines of utilities associated with expanded service areas. Field surveys or intensive map reviews should be completed and mapped with GIS technology. This information shall become part of a GIS database housed and maintained by the local government and provided to agencies upon request.	
		3- Local governments shall encourage and offer incentives for new developments, as part of the subdivision review process, to use low impact development technique for stormwater control.	
		4- Developers and builders, including land-clearing operators, shall be required to participate in a local government stormwater and sediment erosion control education program.	
		5- Infiltration practices to maintain predevelopment hydrographic conditions shall be emphasized over detention ponds.	
		6- Conservation Reserve Program lands and restoration of prior converted wetlands shall be encouraged to help manage overall stormwater impacts as part of a regional integrated stormwater management plan.	

Appendix A

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		7- Site gas stations, car washes, and other "spill" land uses at least 200 feet from streams and wetlands. 8- The local government shall provide and environmental check-off list that a developer must complete before the issuance of development approvals to ensure protection of aquatic habitats for threatened and endangered species and that proper state and federal permits have been obtained. 9- A watershed impact evaluation board shall be established to review projects within the service area with aquatic, endangered species. 10- Encourage local governments to consider retrofit options where projects exist in floodplains and are on failing septic systems. 11-The use of conservation easements, public ownership, or deed restrictions to ensure the perpetual conservation of natural buffer areas is recommended.	
DWR **John Sutherland**	1	According to CORPUD's scoping letter for expansion of the Little Creek WWTP, a justification of the expansion is to service growth in the Town of Middlesex. In the scoping letter for the plan, Middlesex is not included in the designated study are in Figure 1. The service area boundary should be adjusted to accurately reflect service connections.	Zebulon does provide wastewater service to the Town of Middlesex in Nash County. However, Middlesex must develop the appropriate environmental documents for new infrastructure and will address all direct, secondary, and cumulative impacts in those documents.
	2	SCIs are not necessarily confined to a project's service area. SCI may extend downstream of service area and jurisdictional boundaries. Plans to address SCI that may occurred outside of the project service area, including areas in Johnston and Nash counties, should be discussed. The study area boundary in Figure 1 should be adjusted to accurately reflect potential SCI.	Secondary impacts from CORPUD's infrastructure will be generally be limited to its service area. Cumulative direct impacts may result from adjacent development, and cumulative direct impacts will be addressed in individual environmental documents.
	3	Discuss why upstream parcels of Wake County are outside of the study area. Upstream uses may contribute to downstream SCI.	Secondary impacts from CORPUD's infrastructure will be generally be limited to its service area. Cumulative direct impacts may result from adjacent development, and cumulative direct impacts will be addressed in individual environmental documents.
	4	In addition to summarizing relevant local plans and ordinances, all relevant existing ordinances or land use plans that will avoid, minimize, or mitigate SCI should be provided as appendices or as referenced Internet links.	A summary of ordinances will be included in the Plan; the ordinances will be included on a CD and included as an appendix.
	5	Maps to adequately delineate the infrastructure and the existing environment described in Sections II and IV of the proposed outline should be provided. Maps should be provided that delineate both existing land use and projected land use in the service area and for lands adjacent to the service area.	Existing and future land use maps and tables will be provided in the Plan.
	6	Plan should report any existing resources not currently attaining their state-designated uses or classification. This is an indication of effectiveness of existing ordinances.	Impaired (303(d)) waters will be included in the Plan. Since many of the stormwater programs are relatively new, impairment does not necessarily indicate that ordinances are not effective.
	7	Monitoring programs, timetables and benchmarks to evaluate efficacy of Plan should be included.	The City has agreed to monitor as part of the mitigation package for the Benton WTP, and this monitoring will be described in the Plan. At this time, additional monitoring programs are not planned.
	8	Water conservation and reuse initiatives should be described.	The programs will be described.
	9	Plan should include change in urban land use due to redevelopment of residential and commercial areas. Higher densities usually result in less natural vegetation and wildlife habitat and can impact imperviousness.	The Plan will include this as it appears in current versions of local land use plans. Impervious surfaces will be estimated for the study area (not necessarily due to infill/redevelopment) based on literature values.

Appendix A

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	10	The role of created and restored wetlands should be discussed in mitigation of SCI section	In general, wetland restoration is completed as mitigation of direct impacts.
	11	Wildlife and Natural Vegetation is listed twice in Section IV of proposed outline.	Wildlife and Natural Vegetation will be discussed one time.
Cultural Resources Renee Gledhill-Earley	1	No comments on scoping document.	No response required.

Agency Scoping Comments

North Carolina
Department of Administration

Michael F. Easley, Governor

Britt Cobb, Secretary

August 21, 2007

Ms. Ruth Swanek
CH2MHILL
3125 Poplarwood Court
Suite 304
Raleigh, NC 27604

Dear Ms. Swanek:

Re: SCH File # 08-E-4300-0007: Scoping; Secondary and Cumulative Impacts Management Plan for Planned Infrastructure for the City of Raleigh

The above referenced environmental impact information has been reviewed through the State Clearinghouse under the provisions of the North Carolina Environmental Policy Act.

Attached to this letter are comments made by agencies reviewing this document identifies issues to be addressed in the environmental review document. The appropriate document should be forwarded to the State Clearinghouse for compliance with State Environmental Policy Act. Should you have any questions, please do not hesitate to call me at 807-2425.

Sincerely,

Chrys Baggett/STC

Ms. Chrys Baggett
Environmental Policy Act Coordinator

Attachments

cc: Region J

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NCDENR

North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary

AUG 2007
RECEIVED
Secretary's Office
DOA

MEMORANDUM

TO: Chrys Baggett
State Clearinghouse

FROM: Melba McGee
Environmental Review

RE: 08-0007 Secondary and Cumulative Impacts Management Plans for Raleigh, Garner, Knightdale, Rolesville, Wake Forest, Wendell and Zebulon

DATE: August 20, 2007

The City of Raleigh proposes to develop a document that outlines the secondary and cumulative impacts associated with the water and wastewater infrastructure needed to accommodate the growth in its community, as well as, all the merger municipalities listed above. The list of task identified in their scoping notice presents a reasonable framework; however, we would like to see transportation plans and improvements added to the proposed workplan. The objective of the Secondary and Cumulative Impacts (SCI) Management Plans is to provide a holistic review of the environmental impacts associated with planned land use changes and infrastructure projects required to accommodate future population growth. The department feels transportation plays a key role in future growth.

The department supports the initiative of the SCI Management Plan but anticipates following the same basic workplan that was developed for the Western Partners. We think this approach addresses secondary and cumulative impacts in a much more comprehensive manner. Although, we encourage following the same process, we do understand that discussions and negotiations of the specific elements and strategies to mitigate the impacts will be specific to each municipality.

Thank you for the opportunity to review.

Attachments

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Michael F. Easley, Governor

William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Coleen H. Sullins, Director
Division of Water Quality

August 15, 2007

MEMORANDUM

TO: Melba McGee, Environmental Projects Officer
DENR

THRU: Darlene Kucken, Supervisor DK
Basinwide Planning Unit

FROM: Hannah Stallings, SEPA Coordinator HS
Basinwide Planning Unit

SUBJECT: City of Raleigh
Scoping – SCI Mitigation Plan for Planned Infrastructure
DENR#08-0007, DWQ#13870

The Division of Water Quality has the following comments and concerns on the subject project:

1. Page 1 states that Raleigh will administer "all water and wastewater infrastructure for each of these municipalities [Raleigh and the Towns of Garner, Rolesville, Knightdale, Wake Forest, Wendell, and Zebulon], from sewer system upgrades and expansions to billing. New projects related to water and wastewater infrastructure in each of these municipalities are the responsibility of the City of Raleigh." Will the City cover the cost of these future projects or will the funding for a project in a certain area be covered solely by funds from that municipality?
2. Page 1 states "Growth will occur as a result of this new infrastructure, but the growth will be regulated by ordinances that are in place within the individual municipalities, not Raleigh. These municipalities' individual ordinances that are in place to mitigate environmental impacts as a result of growth related to the infrastructure projects are a major component" of the SCIMP process. Page 2 states the water and wastewater master plans developed by Raleigh "provide the general sizing and location of facilities such as the water treatment plant, water distribution lines, booster pump stations, and water towers; and gravity sewer lines, wastewater pump stations and sewer force mains.
   Please explain how the towns will regulate their own growth and have wholly independent ordinances while Raleigh exclusively administers the allocation of water and/or wastewater capacity and routing of dependent utilities for each town. Each municipality, excepting Raleigh, will not have the ability to entice the type development (especially industrial development) to meet its unique economic or social needs since they will not have control over their own infrastructure.
3. Page 1 states "Raleigh has completed a series of merger agreements with all of the municipalities in the eastern and northern portion of Wake County." Page 2 states that Raleigh "has developed water and wastewater infrastructure master plans, and will expand these plans to include future water and wastewater to serve" itself, Garner, Rolesville, Knightdale, Wake Forest, Wendell, and Zebulon. Page 2 also states "The study area [for the development of the SCI Mitigation Plan] is the current land area of Raleigh, Garner, Knightdale, Rolesville, Wake Forest, Wendell, and Zebulon and their long range urban service areas . . ." Please acknowledge that Zebulon also provides sewer service to the town of Middlesex, which is in Nash County.

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4. Page 2 states "It is anticipated that this SCI Management Plan will be applicable for a period of ten to fifteen years, and then will be updated. It is also anticipated that there will be an agreement with the NC Department of Environment and Natural Resources (DENR) which includes triggers that would necessitate earlier updates to the plan." Since the details of the agreement are yet to be finalized, it would be more appropriate to say "The City of Raleigh has entered into an memorandum of agreement (MOA) with the Department of Environment and Natural Resources (DENR) that outlines how the SCI Master Mitigation Plan document will be used, the time period during which it can be cited in individual EAs and EISs, and under what circumstances it must be updated more frequently."
5. Page 2 states that "SCI are directly tied to changes in land use." Page 5 states "Cumulative impacts from the construction of I-540 will be examined from existing NCDOT and other state agency NEPA/SEPA documentation related to I-540."
   The secondary impacts from transportation projects will occur before the cumulative impacts of such a project. Therefore, please acknowledge that transportation projects also lead to SCI since they typically secondarily **and** cumulatively result in changes in local land use patterns.
   Also, consider the affects of installation of water and wastewater infrastructure when combined with the affects of future transportation projects may result in cumulative impacts.
6. Page 4 has the anticipated infrastructure in three categories: water, wastewater, and reclaimed water. As quoted above, the scoping document states that it will cover "water and wastewater infrastructure. Please be clear on whether "wastewater infrastructure" also includes reclaimed water projects.
7. Page 3 states "Since the watershed within the study area are variable in the quality of environmental resources and subsequently are protected by different management strategies, the study areas for the Raleigh SCI plan will be divided by the watersheds. Thus, the existing environment, environmental impacts, and mitigation sections will be outlined by major watershed area . . ." Page 1 states that since "growth will be regulated by the ordinances that are in place within the individual municipalities . . .[these ordinances] are in place to mitigate environmental impacts as a result of growth related to the infrastructure projects." The footnote for Table 2 states that because some "watersheds are not water supply [watersheds] and do not provide habitat for federally listed species, they may be combined in the SCI document."
   Since none of the watersheds appear to intersect among the separate municipalities and each municipality may have separate ordinances for managing their local environment for SCI impacts, it would seem that the SCI plan would be divided by the municipalities and not by separate watersheds. This is assuming that each municipality will continue to develop their own, unique ordinances that will be determined by Raleigh. However, DWQ does encourage a complete review and coordination of ordinances that equally protect the entire watershed across municipal boundaries.
   Please respond.
8. Page 4 states "Exact locations of the proposed infrastructure [within Raleigh's total service area] will be determined while the environmental documents examine the direct impacts are developed." The environmental review process is complete on at least two of the projects presented in the appendices. Please be more specific in your reporting.
9. Page 4 states "There are currently projects under design to extend reclaimed water to Glaxo from the Little Creek WWTP in Zebulon and to the softball fields in Raleigh from the Neuse River WWTP."
   a. 'Glaxo' is now 'GlaxoSmithKline.'
   b. When should the projects to transmit reclaimed water to GlaxoSmithKline be completed?
   c. As local populations continue growing, more wastewater will be generated and more drinking water will be needed, and there will be continued water restrictions due to the lack of potable water. Therefore, the City should make use of more reuse wastewater. This

effort will also reduce the amount of nutrients added back into the nutrient sensitive waters of the Neuse River Basin.

10. Page 5 states potential impacts to threatened species will be considered in development of the SCI Mitigation Plan. Please address that water and wastewater projects can have direct, secondary, and cumulative impacts on threatened species in the Plan.
11. Proposed Outline: 'Description of Existing Environment in Planning Area'
    a. Please change the label of 'Prime or Unique Agriculture' to 'Prime or Unique Agricultural Land.'
    b. Please add 'Introduction of Toxic Substances.'
12. Stormwater does substantial and generally irreversible damage to the aquatic environment. It is difficult to find streams in Wake County that receive uncontrolled stormwater runoff that are not significantly impacted or impaired.
    a. Remaining streams in the Plan's area that are not presently impaired by stormwater should be targeted for protection measures to prevent their degradation.
    b. Please provide additional information to help clarify the application of the numerous stormwater programs.
    c. It would be practical for future planners and engineers if the SCI Mitigation Plan contained a detailed assessment of the various stormwater and buffer requirements that are in effect for individual watersheds covered by the Plan.
13. It is recommended that CORPUD utilize "Swimming with the Current" (http://www.ncwildlife.org/planningworkshop/swimming_with_the_current.pdf), which is a guide to help municipalities protect their aquatic ecosystems while streamlining the environmental review process. Please make note of the N.C. Wildlife Resources Commission's "Guidance Memorandum to Address and Mitigate Secondary and Cumulative Impacts to Aquatic and Terrestrial Wildlife Resources and Water Quality" (http://www.ncwildlife.org/pg07_WildlifeSpeciesCon/pg7c3_impacts.pdf), as this document will assist in the mitigation of impacts to water quality, to fish and wildlife and their habitat generally, and in situations where federally threatened and endangered species exist.

Please contact me at 733-5083, ext. 555, if I can be of any help in resolving these issues.
Thank you.

NCDENR

North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary

07 August 2007

AUG 2007
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Secretary's Office
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MEMORANDUM

TO: Melba McGee, Environmental Projects Officer
Office of Legislative and Intergovernmental Affairs

FROM: Sarah McRae, Freshwater Ecologist
NC Natural Heritage Program

SUBJECT: Scoping for City of Raleigh's Secondary and Cumulative Impacts Management Plan for Planned Infrastructure; Project #08-0007

The City of Raleigh is developing a Secondary and Cumulative Impacts (SCI) Management Plan for proposed infrastructure projects. It is the City of Raleigh's intention to reference this SCI Management Plan in future environmental documents that address direct impacts of infrastructure projects. The City has indicated that the SCI Management Plan will be applicable for a period of ten to fifteen years, and then will be updated. The NC Natural Heritage Program (NHP) commends the City of Raleigh on taking this proactive step, and we look forward to providing as much information as possible to make the SCI Management Plan a valid and useful document.

NHP is concerned about impacts to significant natural heritage areas as well as impacts to sensitive and rare species and communities. A significant natural heritage area is an area of land or water identified by the NHP as being important for protection of the State's biodiversity. Significant natural heritage areas contain one or more Natural Heritage elements - high-quality or rare natural communities, rare species, and special animal habitats. The nationally significant Little River Aquatic Habitat, Swift Creek Aquatic Habitat, Mitchells Mill State Natural Area, the state significant Adam Mountain, Hemlock Bluffs State Natural Area, Swift Creek Bluffs, The Rocks, William B. Umstead State Park, Yates Millpond, the regionally significant Pulleytown Road Granitic Flatrocks and Beaver Pond, Roberstons Pond and Buffalo Creek Floodplain, Southwest Rolesville Granitic Outcrops, Temple Rock, Upper Barton Creek Bluffs and Ravine, Upper Neuse River Floodplain, Wild Cat Hollow, Crabtree Creek Aquatic Habitat, as well as the county significant Barham Granitic Flatrocks, Crabtree Creek/Ebenezer Church Road Slopes, Fowlers Mill Creek Granitic Flatrocks, Hodges Mill Creek Granitic Flatrocks, Lake Johnson Nature Park, Lake Mirl Granitic Flatrocks, Lake Raleigh Hardwood Forest, Marks Creek Floodplain, Neuse River (Clayton) Forests, Richland Creek Hardwood Forest, Six Forks Longleaf Pine Forest, and Walnut Creek Bottomland Forests are within the planning area.

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Recorded rare species that may be impacted are: the federally and state endangered Dwarf wedgemussel (*Alasmidonta heterodon*) and Michaux's sumac (*Rhus michauxii*), the federal species of concern and state endangered Atlantic pigtoe (*Fusconaia masoni*), Yellow lance (*Elliptio lanceolata*), Green floater (*Lasmigona subviridis*), and Virginia least trillium (*Trillium pusillum* var. *virginianum*), the federal species of concern and state threatened Sweet pinesap (*Monotropsis odorata*), the federal and state species of concern Carolina madtom (*Noturus furiosus*), the state threatened Bald eagle (*Haliaeetus leucocephalus*), Triangle floater (*Alasmidonta undulata*), Eastern lampmussel (*Lampsilis radiata*), Creeper (*Strophitus undulatus*), Least brook lamprey (*Lampetra aepyptera*), Bog spicebush (*Lindera subcoriacea*), Small's Portulaca (*Portulaca smallii*), and Piedmont quillwort (*Isoetes piedmontana*), the state special concern Notched rainbow (*Villosa constricta*), Neuse River waterdog (*Necturus lewisi*), Four toed salamander (*Hemidactylium scutatum*), Star-nosed mole (*Condylura cristata* pop.1), and the state significantly rare Carolina ladle crayfish (*Cambarus davidi*), a caddisfly (*Dibusa angata*), Lewis's heartleaf (*Hexastylis lewisii*), Pursh's wild petunia (*Ruellia purshiana*), Glade milkvine (*Matelea decipiens*), Carolina thistle (*Cirsium carolinianum*), Heller's rabbit tobacco (*Gnaphalium helleri*), Appalachian golden banner (*Thermopsis mollis*), Glade milkvine (*Matelea decipiens*), Water purslane (*Didiplis diandra*), Bigleaf magnolia (*Magnolia macrophylla*), Indian psychic (*Porteranthus stipulatus*), Western rough goldenrod (*Solidago radula*), Kidney sedge (*Carex reniformis*), Southern skullcap (*Scutellaria australis*), Orange peatmoss (*Sphagnum subsecundum*), Virginia mountain mint (*Pycnanthemum virginianum*), Earle's blazing star (*Liatris squarrulosa*), Granite flatsedge (*Cyperus granitophilus*), Buffalo clover (*Trifolium reflexum*), a witch grass (*Dichanthelium annulum*), and a moss (*Cleistocarpidium palustre*). Rare communities in the project area are Granitic flatrocks, Piedmont/coastal plain acidic cliff, Coastal plain semipermanent impoundment, Piedmont monadnock forest, Dry-mesic oak-hickory forest, Mesic mixed hardwood forest (piedmont subtype), Piedmont/coastal plain heath bluff, Basic mesic forest (piedmont subtype), Coastal plain small stream swamp (brownwater subtype), Piedmont/low mountain alluvial forest, Low elevation seep, and a Colonial Wading Bird Colony.

Our primary concern with the SCI Management Plan is the 10-15 year time period for which the document will be valid. While we are not opposed to the Plan being valid for several years, periodic reports should be submitted to document any additions, deletions, or changes that may occur to infrastructure projects or mitigation measures detailed in the Plan. NHP recommends that there should be a provision that allows the management plan to be re-evaluated if significant changes in the populations of rare species are observed. Significant changes include, but are not limited to, the listing or change in the listing status of a species under the Endangered Species Act, significant declines in known populations, or significant changes in habitat that could be detrimental to the continued survival of rare and sensitive species.

The outline for the SCI Management Plan appears comprehensive, however, we would like to see transportation plans and improvements addressed. In order to expedite review of the plan, NHP recommends that the City of Raleigh thoroughly address <u>all</u> issues set forth in the NC Wildlife Resources Commission's (WRC) "Guidance memorandum to address and mitigate secondary and cumulative impacts to aquatic and terrestrial wildlife resources and water quality" published in August 2002 and available on the web at http://www.ncwildlife.org/pg07_WildlifeSpeciesCon/pg7c3_impacts.pdf. In addition, since

similar documents have been prepared by Cary, Apex, Holly Springs and Morrisville, NHP would like to see Raleigh's document mirror those as much as possible.

Please let me know if I can provide more information. The North Carolina Natural Heritage Program looks forward to a collaborative effort to help protect the State's natural diversity. If I can be of assistance, please do not hesitate to call me at 919-715-1751.

CC via email: Shari Bryant, WRC
Fred Tarver, DWR
Brian Strong, DPR

North Carolina
Department of Environment ar
Natural Resources

Michael F. Easley, Governor
William G. Ross Jr., Secretary

North Carolina
Division of Forest Resources

Wib L. Owen, Director

August 14, 2007

MEMORANDUM

TO: Melba McGee, Office of Legislative Affairs

FROM: Michael Mann, NC Division of Forest Resources

SUBJECT: Scoping Document: Secondary and Cumulative Impacts Management Plan for Planned Infrastructure for the City of Raleigh

PROJECT #: 08-0007

The North Carolina Division of Forest Resources has reviewed the referenced document and does not object to the project as proposed. Where woodlands will be impacted, NCDFR would like to see the following points addressed in the Environmental Assessment.

1. List, by timber type, the total forest land acreage that is removed or taken out of forest production as a result of the project. If no impacts will occur please state so in the document.

2. The provisions the contractor will take to utilize the merchantable timber removed during construction. Emphasis should be on selling all wood products. However, if the wood products cannot be sold then efforts should be made to haul off the material or turn it into mulch with a tub grinder. This practice will minimize the need for debris burning, and the risk of escaped fires and smoke management problems to residences, highways, schools, and towns.

3. If woodland burning is needed, the contractor must comply with the laws and regulations of open burning as covered under G.S. 113-60.21 through G.S. 113-60.31. Wake County is classified as a non-high hazard county, and G.S. 113-60.24 requiring a regular burning permit applies.

We appreciate the opportunity to comment on the proposed project.

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North Carolina Wildlife Resources Commission

MEMORANDUM

TO: Melba McGee, Environmental Coordinator
Office of Legislative and Intergovernmental Affairs

FROM: Shari L. Bryant, Piedmont Region Coordinator
Habitat Conservation Program

DATE: 15 August 2007

SUBJECT: Scoping for Secondary and Cumulative Impact Management Plan for Planned Infrastructure, City of Raleigh, Wake County. DENR Project No. 08-0007.

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 et seq.), the North Carolina Environmental Policy Act (G.S. 113A-1 through 113A-10; 1 NCAC 25), the North Carolina General Statutes (G.S. 113-131 et seq.) and the North Carolina Administrative Code 15A NCAC 101.0102.

The City of Raleigh has completed a series of utility merger agreements with the Towns of Garner, Rolesville, Knightdale, Wake Forest, Wendell, and Zebulon. These merger agreements merge all the water and wastewater utilities from each individual municipality with the City of Raleigh's Public Utilities Department. The Secondary and Cumulative Impact (SCI) Management Plan will include the planned infrastructure for each of these Towns and the City of Raleigh. Growth will be regulated by the ordinances that are in place within the individual municipalities, not the City of Raleigh. The SCI Management Plan will address the impacts of growth facilitated by planned water and sewer facilities, and measures to mitigate those impacts. Separate environmental documents that address the direct impacts of individual infrastructure projects would be required.

Neuse River, Crabtree Creek, Walnut Creek Swift Creek, Middle Creek, Marks Creek, Buffalo Creek, Little River, and Mocassin Creek flow through or drain portions of the service area. Within these watersheds there are records for the federal and state endangered dwarf wedgemussel (*Alasmidonta heterodon*) and Tar spinymussel (*Elliptio steinstansana*); the federal species of concern and state endangered Atlantic pigtoe (*Fusconaia masoni*), green floater (*Lasmigona subverdis*), and yellow lance (*Elliptio lanceolata*); the federal species of concern and state special concern Carolina madtom (*Noturus furiosus*); the federal species of concern and state significantly rare pinewoods shiner (*Lythrurus matutinus*) and Roanoke bass (*Ambloplites cavifrons*); the state threatened creeper (*Strophitus undulatus*), Eastern lampmussel (*Lampsilis radiata*), triangle floater (*Alasmidonta undulata*), Roanoke slabshell (*Elliptio roanokensis*), and least brook lamprey (*Lampetra aepyptera*); the state special concern North

Mailing Address: Division of Inland Fisheries • 1721 Mail Service Center • Raleigh, NC 27699-1721
Telephone: (919) 707-0220 • **Fax:** (919) 707-0028

Aug 15 07 10:12a Shari Bryant 336.449.7625 p.3

Carolina spiny crayfish (*Orconectes carolinensis*) and notched rainbow (*Villosa constricta*); and the state significantly rare Carolina ladle crayfish (*Cambarus davidi*).

We are supportive of the development of a Secondary and Cumulative Impact (SCI) Management Plan for the service area. A SCI Management Plan (Plan) should result in a more proactive approach to mitigation for SCI and SCI issues will be addressed within a single document and will not need to be reproduced for each environmental document. The time frame the Plan is valid should be based on the infrastructure projects and mitigation measures covered within the Plan. While we are not opposed to the Plan being valid for several years, periodic reports should be submitted to document any additions, deletions, or changes that may occur to infrastructure projects or mitigation measures detailed in the Plan. In addition, there should be a provision that allows the Plan to be re-evaluated and updated if significant changes in aquatic or terrestrial wildlife populations are observed. Significant changes may include, but are not limited to, the listing or change in listing (e.g., from threatened to endangered) of a species; significant declines (e.g., numbers or health) in known populations; or significant changes in habitat (e.g., water quality) that could be detrimental to aquatic and terrestrial wildlife resources.

The Plan should include the following information:

- A detailed listing of all existing and future infrastructure projects (i.e., water, wastewater, water reuse, and transportation) within the service area. Figures detailing the location of existing and future infrastructure should be included.
- Detailed information on existing and future natural areas (e.g., parks or greenways) within the service area. Figures detailing the location of these natural areas should be included.
- Three maps detailing environmental features, existing land use, and future land use within the service area. Examples of these maps can be found in the Town of Cary's Secondary and Cumulative Impact Master Mitigation Plan, Figures 4-1, 4-2, and 5-1. See http://www.townofcary.org/depts/pwdept/scimastermitigation.htm.
- Two tables detailing land use type (e.g., commercial) for existing and future land use. For each land use type include total square miles of the service area, percent of the service area, percent imperviousness, and impervious square miles. Examples of these tables can be found in the Town of Cary's Secondary and Cumulative Impact Master Mitigation Plan, Tables 4-2 and 5-1. See http://www.townofcary.org/depts/pwdept/scimastermitigation.htm.
- Information on the average percent imperviousness for the existing and future service area. Discuss the impact increased impervious surface will have on groundwater recharge and stream baseflow.
- A listing of all streams within the service area and the Division of Water Quality (DWQ) classification for each stream. Also, note whether any streams are on the 303(d) list of impaired waters. Include any proposed measures to improve water quality in impaired streams.
- NC GAP habitat land cover for the service area. The land use maps and NC GAP habitat land cover will be very useful in determining the impact that changes in land use will have on aquatic and terrestrial wildlife resources.
- Detailed information regarding current measures (e.g., state/federal regulations and/or local ordinances) and any proposed measures to mitigate secondary and cumulative impacts facilitated by additional development. We are particularly interested in measures related to riparian buffer, floodplain and open space protection; impervious surface limits and stormwater management; and sediment and erosion control.

We offer the following recommendations to help address secondary and cumulative impacts and to reduce impacts to aquatic and terrestrial wildlife resources. These recommendations are summarized from NCWRC's *Guidance Memorandum to Address and Mitigate Secondary and Cumulative Impacts to Aquatic and Terrestrial Wildlife Resources and Water Quality* (August 2002). More detailed information and supporting literature for each recommendation can be found in the document which is located on the web at: http://www.ncwildlife.org/pg07_WildlifeSpeciesCon/pg7c3_impacts.pdf.

1. Maintain or establish a minimum 100-foot native forested buffer along each side of perennial streams and 50-foot native forested buffer along each side of intermittent streams and wetlands throughout the present and future service areas or the entire municipal jurisdiction. Additionally implement buffers on ephemeral streams due to the important functions that they provide as headwater streams. Buffers should be measured horizontally from the edge of the stream bank, which may result in wider buffers on higher gradients, and should be provided over the entire length of stream, including headwater streams. Further, we recommend leaving 30% of the development area as greenspace, which would include buffers and wetlands and ensure that the greenspace is connected to natural resources.

2. Delineate streams for the municipal service area according to U. S. Army Corps of Engineers (USACOE) or N. C. Division of Water Quality (NCDWQ) methodology.

3. Sewer lines, water lines, and other utility infrastructure should be kept out of riparian buffer areas. All utility crossings should be kept to a minimum, which includes careful routing design and the combination of utility crossings into the same right-of-way (provided there is not a safety issue). 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 only be used 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 and should be monitored at least every three months for maintenance needs during the first 24 months of the project and then annually thereafter. Sewer lines associated with crossing areas should be maintained and operated at all times to prevent the discharge to land or surface waters. We recommend a minimum 50-100 foot setback on all streams, lakes, and wetlands for these structures, which falls in line with the recommended buffer widths. In circumstances where minimum setbacks cannot be attained, sewer lines shall be constructed of ductile iron or other substance of equal durability. Further, pesticides (including insecticides and herbicides) should not be used for maintenance of rights-of-way within 100 feet of perennial streams and 50 feet of intermittent streams, or within floodplains and wetlands associated with these streams.

4. 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. Native, annual small grains appropriate for the season are preferred and recommended (See http://h2o.enr.state.nc.us/esb/Wetplant/Wetland_Plants.htm). Where feasible, use woody debris and logs from corridor clearing to establish brush piles and downed logs adjacent to the cleared right-of-way to improve habitat for wildlife. Allowing the corridor area to revegetate into a brush/scrub habitat would maximize benefits to wildlife. For areas adjacent to residential areas, a native shrub/grass option may also be beneficial. Minimize corridor maintenance and prohibit mowing between April 1 and October 1 to minimize impacts to nesting wildlife. We suggest a maintenance schedule that incorporates only a portion of the area —one third of the area, for example—each year instead of the entire project every 3 or 4 years. Herbicides and insecticides should never be used in wetland areas or near streams, as described above in item 3.

5. Prohibit commercial or residential development within the 100-year floodplain. Instead, set aside a portion of the land to be developed as green space and concentrate these areas along the streams and rivers (see item 1 above). In addition we encourage "infill" (new development in unused or underutilized land in existing urban areas) development in urbanized portions of the jurisdiction and recommend the site practices for infill and brownfield development issued by the U. S. Environmental Protection Agency (EPA) (http://www.epa.gov) and the Center for Watershed Protection (http://www.cwp.org/).

6. Limit impervious surfaces to less than 10% of the watershed. We also recommend sufficient open space is provided to effectively reduce impervious surface so that predevelopment hydrographic conditions are maintained, limit curb and gutter in new developments, and prevent direct discharges of stormwater into streams. To achieve no net change in the hydrology of the watershed, we recommend installation of grassed swales in place of curb and gutter and on-site stormwater management (i.e. bioretention areas or other attenuation measures). Suggested examples to accomplish the <10% impervious goal are using conventional designs at a level of <10% imperviousness or using conservation clusters with higher densities, with dedicated open space and other stormwater control measures to mimic the hydrograph consistent with an impervious coverage of less than 10%. Reduction of road widths is one method to reduce overall impervious surface coverage.

7. Use bridges for all permanent roadway crossings of streams and associated wetlands to eliminate the need to fill and culvert, where practicable. If culverts must be used, the culvert should be designed to allow passage of aquatic organisms. Generally, this means that the culvert or pipe invert is buried at least one foot below the natural streambed. If multiple cells are required, the second and/or third cells should be placed so that their bottoms are at stream bankfull stage. This will allow sufficient water depth in the culvert or pipe during normal flows to accommodate movements of aquatic organisms. If culverts are long and sufficient slope exists, baffle systems are recommended to trap gravel and provide resting areas for fish and other aquatic organisms. If multiple pipes or cells are used, at least one pipe or box should be designed to remain dry during normal flows to allow for wildlife passage. In addition, culverts or pipes should be situated so that no channel realignment or widening is required. Widening of the stream channel at the inlet or outlet of structures usually causes a decrease in water velocity causing sediment deposition that will require future maintenance. Finally, riprap should not be placed on the streambed.

8. Incorporate the following elements into erosion and sediment control plans: minimize clearing and grading, protect waterways, phase construction for larger construction sites (≥25 acres), stabilize soils as rapidly as possible (<2 weeks), protect steep slopes, establish appropriate perimeter controls, employ advanced settling devices, implement a certified contractors program and regularly inspect erosion control measures.

Specific Mitigation Measures for Waters Containing Federally Listed Species

For those watersheds that support the dwarf wedgemussel and/or Tar spinymussel, the following additional conditions shall be followed. These measures provide a higher degree of protection and also serve to protect the state-listed species and the general biotic integrity of these systems. The natural resource agencies' concerns regarding indirect effects to threatened and endangered species will be alleviated by adoption of these measures.

Stormwater

1. Permits for new developments exceeding 6% imperviousness shall be required to include stormwater controls designed to replicate and maintain the hydrographic condition at the site prior to the change

in landscape and at a minimum include provisions that satisfy WS II-HQW minimum standards. This can be achieved through a variety of measures (see item 6 above).

2. Maintain or establish a 200-foot native, forested buffer on perennial streams and a 100-foot forested buffer on intermittent streams, or the full extent of the 100-year floodplain, for new developments. If wooded buffers do not exist, then these areas shall be revegetated or allowed to naturally revegetate (so long as the area is pervious) to increase the functionality of a forested buffer.

3. Grassed swales shall be used in place of curb and gutter for new developments, except in areas with >5% slope. Check dams, level spreaders, and other associated best management practices shall be used to minimize the effect of stormwater runoff entering the riparian buffer areas. In areas where slopes exceed 5%, stormwater collected in piped conveyance systems shall be directed away from surface waters and best management practices shall be employed at both the intake and the outlet areas. Curbs and gutters may be used in combination with sidewalks in areas where clustering of uses increases the net local density to a level greater than 4 dwelling units per acre. This will separate the pedestrian portion of a street-scape from the automobile portion and will encourage greater pedestrian mobility within the cluster development. Clustering development away from riparian areas will also allow for greater stream protection.

4. Direct discharges of stormwater to streams should not be allowed. Effective energy dissipation at the pipe outlet shall be accomplished to prevent scour of the stream channel and buffer. Stream habitats are maintained most effectively when stormwater runoff is dispersed through a vegetated or grassed buffer zone prior to entering the riparian buffer. The ditching or piping of stormwater except when used in combination with grassed swales, level spreaders and check dams shall not be allowed in the riparian buffer. At no time should any mandated vegetated buffer zone be used for these engineered devices.

5. Emergency management procedures shall provide for the containment of runoff from fighting residential, commercial, or industrial fires and for the removal and clean up of any hazardous spills that may endanger nearby streams, instead of flushing contaminants into waterways.

Wastewater Infrastructure

1. Force mains shall be used to the greatest extent practicable. Gravity sewer lines shall be installed to follow along the outside of the 100-year floodplain contour unless topographic features, existing development, or other conditions restrict this technique.

2. Public and private sewer lines adjacent to streams shall parallel streams and be sited as far as practicable from stream and tributary corridors. A minimum 200-foot buffer shall be provided for perennial streams and a 100-foot buffer for intermittent streams to maintain the integrity of the buffer or the full extent of the 100-year floodplain. Sewer lines close to streams shall be constructed of ductile iron or other substance of equal durability, similar to the guidance under the general mitigation measures item number 3.

3. No new sewer lines or structures shall be installed or constructed in the 100-year floodplain or within 50 feet of wetlands associated with a 100-year floodplain.

4. Septic tanks, lift stations, wastewater treatment plants, sand filters, and other pretreatment systems shall not be located in areas subject to frequent flooding (areas inundated at a 10-year or less frequency) unless designed and installed to be watertight and to remain operable during a 10-year storm. Mechanical or electrical components of treatment systems shall be above the 100-year flood level or otherwise protected against a 100-year flood (As per rule 15A NCAC 18A .1950 – Location of Sanitary Sewage Systems).

5. Only aerial crossings elevated sufficiently to reduce the risk of flood damage or directional boring stream crossings shall be allowed. The placement of these crossings will be limited to major stream or creek confluences. Manholes or similar access structures shall not be allowed within buffer areas. Stream crossing areas shall be monitored once a quarter for maintenance needs.

Water and Utility Infrastructure (Electricity, Telecommunications, and Gas)

1. All water lines and utilities shall follow roads or meet the requirements associated with sewer line placements. Stream crossing guidance is presented under the general mitigation measures item number 3.

Maintenance of Rights-of-Ways

1. Insecticides and herbicides shall not be used within 200 feet of streams, floodplains, and associated wetlands except when needed to protect native flora and fauna from exotics and when using appropriately labeled products, such as biopesticides (http://www.epa.gov/pesticides/biopesticides/).
2. Native, forested plant communities shall be maintained within 200-foot buffer area of streams, floodplains, and associated wetlands. A closed canopy will be maintained over streams. Emphasis will be placed upon trimming trees, instead of tree removal, within 200 feet of streams, floodplains, and associated wetlands.

Sediment and Erosion Control

1. In addition to the items listed under the general mitigation measures, locally enforced stringent erosion and sedimentation control requirements shall be developed and implemented for all construction. The development of these requirements shall be fully coordinated with the state and federal agencies involved in aquatic endangered species protection. These measures shall be state-of-the-science and significantly exceed state minimum requirements for sediment and erosion control. Local ordinances shall be developed to prevent "forestry exemptions" from turning into development opportunity without meeting the conditions identified in this memorandum.
2. Fill or buildings shall not be allowed in the 100-year floodplain (as described in previous sections).

Additional Recommendations for Federally Listed Species

1. The local government shall solicit assistance and concurrence from resource agencies such as NCDWQ, N. C. Division of Land Resources, NCWRC, N. C. Natural Heritage Program, and USFWS during the initial development and assessment of best management practices for stormwater management, sediment and erosion control, utility placement, etc.
2. Maps shall be developed of the anticipated construction lines of utilities associated with expanded service areas. This information shall become part of a Geographic Information System (GIS) database housed and maintained by the local government. Surveys or reviews will use maps and field determinations, when necessary, in conjunction with USACOE and NCDWQ delineation criteria for wetlands and waters. As infrastructure or development is planned or developed, field surveys should be conducted to assess impacts and means to avoid impacts. Field surveys (delineation) or intensive map reviews (including soil surveys, National Wetland Inventories (NWI) maps, USGS maps, watershed protection maps of all wetlands and waters) shall be completed and mapped with GIS technology. All GIS databases and associated files shall be provided to state and federal agencies upon request.
3. Local governments shall encourage and offer incentives for new developments, as part of the subdivision review process, to use low impact development technique for stormwater control (*Low Impact Development;* EPA Document # 841-B-00-002 and 841-B-00-003), and reduce impediments

to implementing the plan. Proposed projects that are subject to NCEPA review shall identify as a part of the subdivision review process anticipated impervious surface amounts prior to plat approval.

4. Developers and builders, including land-clearing operators, shall be required to participate in a local government stormwater and sediment erosion control education program. Certification and bonding is recommended

5. Infiltration practices (e.g., reduced road widths, rain gardens, parking lot bioretention areas, increased sheet flow instead of ditching, and disconnect impervious areas) to maintain predevelopment hydrographic conditions shall be emphasized over detention ponds. Condition information should include the base flow for low flow conditions.

6. Conservation Reserve Program lands and restoration of prior converted wetlands shall be encouraged to help manage overall stormwater impacts as part of a regional integrated stormwater management plan.

7. Site gas stations, car washes, and other "spill" land uses at least 200 feet from streams and wetlands.

8. The local government shall provide an environmental check-off list that a developer must complete before the issuance of development approvals to ensure protection of aquatic habitats for threatened and endangered species and that proper state and federal permits have been obtained. This shall preclude the issuance of any subdivision plan, building, and utility permits without inclusion of pertinent protective measures. This process shall ensure that land clearing does not occur without a site plan, including erosion control.

9. A watershed impact evaluation board shall be established to review projects within the service area with aquatic, endangered species. The board would ensure compliance, preview infrastructure and development plans, and be eligible to seek funding for conservation initiatives designed to protect and preserve aquatic, endangered species.

10. We encourage local governments to consider retrofit options, including abandonment of chronic problem areas especially where projects exist in floodplains and are on failing septic systems. These areas should not be candidates for sewer service. Local governments should explore all buyout opportunities of these areas prior to exploration of providing sewer services to these areas. In addition, this should apply to schools and other public institutions. These public facilities should be relocated to more suitable areas. Local governments are encouraged to strengthen local land development codes to ensure that privates lands donated to the public for usage of schools and other public facilities (i.e. fire, police, or medical facilities) are located outside of the 100-year floodplain so as to avoid future problems.

11. We recommend the use of conservation easements, public ownership, or deed restrictions to ensure the perpetual conservation of natural buffer areas.

Thank you for the opportunity to provide input in the early planning stages for this project. If we can be of further assistance, please contact our office at (336) 449-7625.

ec: Dale Suiter, USFWS
Sarah McRae, NHP
Fred Tarver, DWR
Rob Nichols, WRC

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary
John Morris, Director

August 15, 2007

MEMORANDUM

TO: Melba McGee, Environmental Coordinator
Office of Legislative and Intergovernmental Affairs

FROM: John Sutherland
Water Projects Section Chief

SUBJECT: City of Raleigh Public Utilities Department Scoping Comments
Proposed Infrastructure SCI Management Plan (SCH Project No. 08-0007)

The Division of Water Resources (DWR) provides the following comments in response to the July 10, 2007, request for agency scoping comments concerning a secondary and cumulative impact (SCI) management plan ("plan") for the City of Raleigh Public Utilities Department's (CORPUD) service area, consisting of the combined existing and future sewer and water systems of Raleigh, Garner, Rolesville, Knightdale, Wake Forest, Wendell, and Zebulon. The plan will serve to address in part the impacts associated with repairs and expansions in CORPUD's service area.

1. According to CORPUD's scoping letter for expansion of the Little Creek wastewater treatment plant, a justification of the expansion is to service growth in the Town of Middlesex; however, in the scoping letter for the plan, Middlesex is not included in the designated study area in Figure 1. CORPUD should adjust the service area boundary to accurately reflect service connections.
2. SCI are not necessarily confined to a project's service area. SCI may extend downstream of service area and jurisdictional boundaries. CORPUD should discuss plans to address SCI that may occur outside of the project service area, including areas in Johnston and Nash counties. CORPUD should adjust the study area boundary in Figure 1 to accurately reflect potential SCI.
3. CORPUD should discuss why upstream parcels of Wake County are outside of the study area. Upstream uses may contribute to downstream SCI.
4. In addition to summarizing relevant local plans and ordinances, CORPUD should provide as appendices or as referenced Internet links all relevant existing ordinances or land use plans that will avoid, minimize or mitigate SCI.
5. CORPUD should provide maps to adequately delineate the infrastructure and the existing environment described in Sections II and IV of the proposed outline. Maps should be provided that delineate both existing land use and projected land use in the service area.

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CORPUD should also provide existing and projected land use adjacent to and/or downstream of the service area. Uses of these adjacent areas may contribute to SCI.

6. CORPUD should report any existing resources that are not currently attaining their state-designated uses or classification. This is an indication of the effectiveness of existing ordinances that address SCI.
7. CORPUD should discuss any monitoring programs, timetables or benchmarks that may be used to evaluate the efficacy of the plan.
8. CORPUD should discuss any water conservation or wastewater reuse initiatives that will reduce the amount of water withdrawn from reservoirs and streams.
9. CORPUD should address the change in urban land use due to redevelopment of residential and commercial areas. Higher densities usually result in less natural vegetation and wildlife habitat. They also lead to greater percentages of impervious surfaces, which cause higher peak stormwater flows and smaller, sustained base flows.
10. Under Mitigation of SCI, CORPUD should discuss the role of created and restored wetlands.
11. Wildlife and Natural Vegetation is listed twice in Section IV of the proposed outline.

Thank you for the opportunity to comment. If you have additional questions or comments, please contact Fred Tarver at 919/715-5442 or at fred.tarver@ncmail.net.

cc: Linwood Peele, Fred Tarver, DWR
Shari Bryant, WRC
Hannah Stallings, DWQ
Sarah McRae, NHP

NORTH CAROLINA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW

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JUL 2007

STATE NUMBER: 08-E-4300-0007 H03
DATE RECEIVED: 07/10/2007
AGENCY RESPONSE: 08/15/2007
REVIEW CLOSED: 08/20/2007

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A- (NC) DAH 8/6/07
S- NC RGE 8/14/07
8/1/07

PROJECT INFORMATION
APPLICANT: City of Raleigh
TYPE: State Environmental Policy Act
EPD: Scoping
DESC: Secondary and Cumulative Impacts Management Plan for Planned Infrastucture for the City of Raleigh

WAKE Co.

The attached project has been submitted to the N. C. State Clearinghouse for intergovernmental review. Please review and submit your response by the above indicated date to 1301 Mail Service Center, Raleigh NC 27699-1301.

If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED:

☑ NO COMMENT

☐ COMMENTS ATTACHED

SIGNED BY: Renee Gledhill-Earley

DATE: 8-14-07

JUL 19 2007

Summary of Draft Document Comments

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
1	**DWQ Construction Grants and Loans Section: *Jennifer M. Haynie***	The first statement of the second statement might not be the best statement to make.	1.1	The statement will be removed.
2		The first sentence of the second paragraph states that a new reservoir will be opened to serve areas in Wake County. Provide the date that this reservoir is scheduled to open to offer readers a better idea of when water supplies will increase.	1.3	An estimate of the date (2025) will be added to the document.
3		Figure 1-1 and 1-2: These figures are so similar that it is difficult to tell the differences between them. Combine them into one figure.	1.3	The figures will be combined.
4		Provide a figure that will show all planned major infrastructure projects (wastewater, reclaimed water, water, and transportation facilities) to provide the reader with a general idea of where the major projects will occur. This figure does not need to show all detail but instead should focus on large facilities such as wastewater and reclaimed water lines over 12 inches or highways that are four lanes or more.	Appendix	The CIP maps for all major water and wastewater infrastructure are included in Appendix C. The proposed reclaimed water lines from the City's Reuse Master Plan Update will be included on separate maps and included in Appendix C. Proposed major transportation infrastructure maps for each individual municipality are also included in Appendix D, but this Plan is not intended to address SCI from transportation projects.
5		To provide readers with more information about each of the wastewater treatment plants (WWTPs) discussed in the wastewater section, provide copies of their NPDES permits in an appendix.	Appendix; referenced in 2.1.1.	The NPDES permits will be included in Appendix C.
6		Describe the Smith Creek WWTP in the same level of detail as the Neuse River WWTP so that the reader will have a similar understanding of the processes used at this WWTP.	2.1.1	Additional information about the Smith Creek WWTP will be added.
7		Provide a description of the Little Creek WWTP that has a similar level of detail as the Neuse River WWTP.	2.1.1	Additional information about the Little Creek WWTP will be added.
8		When referencing the WWTPs for the first time, include the NPDES permit number so that the reader can locate copies of the permits in the appendices.	2.1.1	NPDES numbers will be added.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
9		The first sentence of the second paragraph reads “In 2006, the permitted capacity of the Little Creek WWTP was re-rated to 2.2 mgd…” Instead of using re-rated, use a phrase such as “was authorized to expand to,” as this phrase better defines the action that occurred.	2.1.2	The statement will be modified as suggested.
10		The last sentence of the second paragraph reads "Figure 2-2 illustrates the water infrastructure…” Add “existing” before “water infrastructure” to further clarify what is being shown in the figure.	2.2	The word "existing" will be added to the text.
11		In the third paragraph, provide an approximate date to show when the Little River Reservoir is expected to be in service. This will show when water supplies will be expected to expand.	2.2.1	An estimate of the date (2025) will be added to the document.
12		While the City of Raleigh may not be able to control mitigative measures for projects that are under the purview of the other towns, it can require mitigative measures for its own projects. Therefore, existing transportation conditions and future plans for transportation facilities specifically within the City of Raleigh should be discussed.	2.3	Transportation infrastructure will not explicitly be included in the SCI document; it will be covered as it is currently. The Memorandum of Agreement (MOA) will clearly indicate that the SCI document applies only to environmental reviews for utility infrastructure projects.
13		The last sentence of the first paragraph implies that the entire transportation plans are within Appendix D whereas only summaries are provided. Consider amending this sentence to more accurately reflect the content of Appendix D or provide the transportation plans either via hard copy or CD.	2.3	The wording in Section 2 will be modified to reflect the content in Appendix D.
14		Consider providing a copy of the City of Raleigh’s Capital Improvement Plan (CIP) on CD in an appendix since the information provided by the CIP feeds into this document.	Appendix; will be referenced in Section 3	The CIP will be included in Appendix C.
15		Add the removal of septic systems from service as a goal since this is the reason for a lot of wastewater infrastructure installation. Additionally, add that removing septic systems from service also improves groundwater quality.	3	The section will be modified as suggested.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
16		When discussing the goals of wastewater reuse projects, use the term “reclaimed water” instead of “water reclamation,” as the latter implies raw wastewater usage instead of treated wastewater.	3	The term "reclaimed water" will be used throughout the document.
17		In Table 4-2, provide what percentage of each watershed is hydric soils.	Table 4-2	The percentage of hydric soils will be added to Table 4-2.
18		Tables 4-3a through 4-3j seem redundant when discussing the more detailed land uses found in Tables 4-5a through 4-5j. Consider removing Tables 4.3a-j.	4	Other reviewers of the documents liked the inclusion of both the generalized and detailed land use descriptions. The generalized tables also coincide with the existing land use data presented in Figure 4-2. The document has not been modified.
19		Sections 6 and 7 While the information provided in Section 6 is good, the chapter is too long. Instead, rearrange these two sections to have Section 7 first as a summary of the details and then split Section 6 into separate sections, one each for each municipality.	6 + 7	Section 6 has been divided in to separate sections for each local government.
20				
21	**NC Natural Heritage Program: *Sarah McRae***	Consult WRC's *Guidance Memorandum to Address and Mitigate Secondary and cumulative Impacts to Aquatic and Terrestrial Wildlife Resources and Water Quality* (August 2002) located at http://www.ncwildlife.org/pg07_WildlifeSpeciesCon/pg7c3_impacts.pdf because the "Mitigation of Secondary and Cumulative Impacts" presented in Section 6 of SCIMP does not address majority of the resource agency recommendations. In order to "manage growth using innovative planning approaches and techniques" (p. 6-1) as stated in the SCIMP, NHP urges the Towns and the City to strengthen mitigation measures.	6	While no community specifically follows WRC's Guidance Memorandum, many of the communities do have comprehensive ordinances to address SCI. These ordinances vary between the municipalities. The ordinances include: Conservation Subdivision zoning, 100 foot riparian buffers, full protection of the 100 and 500-year floodplain, environmental survey requirements, water allocation policies, and water supply watershed protection. Section 6 has been divided into separate sections by local government so measures are easier to review.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
22		NHP recommends leaving a minimum of 30% of development area as green space, including buffers and wetlands and ensure that the green space is connected to natural resources. Local governments should require open space preservation that meets this goal. More rigorous floodplain and riparian buffer requirements may help meet this.	6	Each of the local governments has developed an Open Space Plan. Open space is protected through riparian buffers and floodplain protection policies. In addition, all communities require different levels of open space preservation through the development process ranging from 5 percent to 40 percent of the gross land area of a development site, and the percent can vary within a Town. In many communities this requirement is in addition to the protection of riparian buffers and floodplains. Many of the communities require contiguous open space, the protection of environmental features such as buffers and wetlands, and the inclusion of developable land areas in their open space requirements. Many of the communities do allow lower open space requirements in specific zoning areas as these zoning areas concentrate development in areas that are already currently developed. This type of planning allows for greater open space requirements or lower development densities outside of the concentrated development zoning districts.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
23		Recommend maintenance and establishment of a minimum of 100-foot native forested buffer along each side of perennial streams and 50-foot buffer along each side of intermittent streams and wetlands. In Swift Creek, Middle Creek, Little River and Moccasin Creek watersheds require 200 foot native forested buffer on perennial streams and 100 foot native forested buffer on intermittent streams, or the full extent of the 100-year floodplain.	6 & MOA	The recommended width of a riparian buffer should be dependent on the riparian buffer function and other controls that are implemented in the watershed. In general, wider buffers provide greater protection but at diminishing returns. For general water quality protection, the zoned buffer as outlined in the Neuse Rules, is adequate. All communities are compliant with the Neuse River buffer requirements. The local governments also protect 100 foot riparian buffers in water supply watersheds. Many of the communities have identified sensitive watersheds (either for threatened species or water supply) where more significant buffer protection is required. These include: 1. Garner - Swift Creek/Lake Benson watershed 100 foot buffer protection. For portions of the watershed, the riparian buffer begins outside the 100 year floodplain. The Swift Creek/Lake Benson area makes up approximately 65 percent of Garner's jurisdiction. 2. Raleigh - Falls Lake, Richland Creek watershed protection districts - 100 foot buffers. 3. Wake Forest & Rolesville - 100 foot buffers on all perennial streams, Wake Forest 50 foot buffers on all intermittent streams. Both communities protect the 100 year floodplain and Wake Forest excludes development in the 500 year floodplain. 4. Wendell and Zebulon are the only two communities with jurisdiction within the Little River watershed below the dam site for the reservoir. These local governments are compliant with the Neuse River buffer requirements. 5. Mocassin Creek - Zebulon is the only municipality with jurisdiction in the Moccasin Creek watershed and meets the Neuse River buffer requirements. Currently, the City of Raleigh and its consultants are working with Wendell and Zebulon to enhance riparian buffer and floodplain protection strategies within their jurisdictions. The mitigation in the Little River Watershed downstream of the proposed impoundment may not be adequate to protect federally endangered aquatic species. This has been acknowledged in the MOA.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
24		The Neuse Buffer Rules are water quality buffers, not buffers to protect rare aquatic species such as the federally endangered Tar River spinymussel located downstream of the proposed dam site on the Little River. The downstream section of the Little River should be treated in the same regard as the drainage area for the proposed Little River. The same 100-foot undisturbed buffers required in the water supply area, as specified by the Little River Interlocal Agreement, should be utilized in order to preserve this species.	MOA	We acknowledge that additional ordinances may be needed to protect federally listed species in the Little River watershed as Wendell and Zebulon grow. New ordinances and policies may include wider riparian buffers, but they may not. Wendell and Zebulon are the only two municipalities with jurisdiction in the Little River watershed below the proposed dam site. The City of Raleigh and its consultants are currently working with both Wendell and Zebulon to identify appropriate protective strategies for their jurisdictions as part of the Little Creek WWTP EA process. In addition, the Town Councils of Wendell and Zebulon signed a resolution of support and commitment to mitigative measures to address SCI, including increased riparian buffer widths and full protection of the 100-year floodplain. When the Towns' ordinances are amended, the ordinance will apply to the area within Wendell's and Zebulon's jurisdictions and the Little River watershed. The Little River Watershed wtihin the jurisdictions of Wendell and Zebulon has been explicitly addressed in the MOA.
25		NHP recommends more stringent impervious surface limits and triggers. The SCIMP states "requiring impervious surface values of 10% in all watersheds encourages sprawl and creates other environmental problems" (p. 6-13). NHP questions the "other environmental problems" the applicant is referring to?	6.2.8	The "other environmental problems" statement in the SCI Plan is referring to issues such as increased air pollution due to increased travel times and increased risk to groundwater due to an increase in septic systems. In addition, there may be more development that falls below the thresholds for erosion and sedimentation control and stormwater controls.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
26		Per the WRC Guidance memo the goal to prevent watershed impairment not only for water quality but also for aquatic species is 10% imperviousness goal as a minimum. Each municipality included in the SCIMP does not implement stormwater controls until 24% and allows up to 70% imperviousness. Do not wait until streams are degraded before implementing BMP's. Protective recommendations are outlined in the WRC Guidance memo as well as at http://www.mde.state.us/Programs/WaterPrograms/SedimentandStormwater for more information.	6-14	We agree that it is easier to protect a stream than restore it once it is degraded. Many of the studies upon which the 10 percent recommendation is based were on watersheds that were developed without riparian buffer/floodplain protection and proper erosion and sediment controls. The City of Raleigh and Town of Garner fall under the Neuse River stormwater requirements. As such, they require stormwater BMPs on any development which exceeds 15 percent imperviousness. The Town of Knighdale requires the difference in pre- and post- construction runoff volume be treated for low density development (< 24 percent imperviousness). In water supply watersheds, imperviousness is limited. For example, the communities with a WS-II classification within their jurisdiction maintain the requirements of 6 percent impervious surface in the critical area and 12 percent in the remainder of the watershed. All of the communities are required to be NPDES SW Phase II compliant for impervious surface thresholds and the implementation of stormwater BMPs.
27		NHP recommends each municipality prohibit commercial or residential development within the 100-year floodplain. Ideally municipalities would set aside floodplains as green space.	8-14	We agree that floodplain protection does protect the riparian corridor and open space. Most of the municipalities have floodplain protection ordinances to protect the floodplain, but they vary in their approach and extent of protection. 1. Wake Forest and Rolesville both protect the 100 year floodplain and Wake Forest excludes development in the 500 year floodplain. 2. Garner does not allow development in the 100 year floodplain. 3. The City of Raleigh limits development of the floodplain to 50 percent in order to encourage redevelopment. Due to the urbanized nature of a majority of the City's jurisdiction, much of the floodplain has been historically developed and is currently being redeveloped. 4. The Town of Knightdale has preserved a portion of its major floodplains through zoning. It includes an Open Space Preserve (OSP) zoning district along major creeks. This zoning district is intended to permanently protect natural and/or environmentally significant lands.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
				5. Zebulon does not allow development in the floodplain for conservation subdivisions. Wendell and Zebulon's flood protection ordinances are designed to protect life and property (FEMA). Currently, the City of Raleigh and its consultants are working with the Towns of Wendell and Zebulon to enhance their floodplain protection strategies within their jurisdictions as part of the Little Creek WWTP EA process. The MOA recognizes that Wendell and Zebulon may need more protective ordinances, and floodplain protection may be included in the future.
28		NHP is most concerned about the Little River watershed. NHP recommended the minimization of impacts to Little River Watershed, specifically down stream of the reservoir dam site, a future water supply resource and home to rare aquatic species. NHP is concerned about the intent of local governments to seek a "stream reclassification and expansion their USA" (p 1-5) downstream of the proposed dam site. NHP strongly encourages strict regulations particularly those detailed in the "Specific Mitigation Measures for Waters Containing Federally listed Species" section of the WRC guidance memo.	MOA	We agree that the current ordinances that apply in the Little River watershed may not be adequate to protect the federally listed species. Wendell and Zebulon are the only two municipalities with jurisdiction in the Little River watershed below the proposed dam site. The City of Raleigh and its consultants are currently working with both Wendell and Zebulon to identify appropriate protective strategies for their jurisdictions as part of the Little Creek WWTP EA process. In addition, the Town Councils of Wendell and Zebulon signed a resolution of support and commitment to mitigative measures to address SCI, including increased riparian buffer widths and full protection of the 100-year floodplain. When the Towns' ordinances are amended, the ordinance will apply to the area within Wendell's and Zebulon's jurisdictions and the Little River watershed. The MOA recognizes that Wendell and Zebulon may need more protective measures for downstream aquatic endangered species.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
29		It is clear that water supply issues are the highest priority for the municipalities involved with the SCIMP, it also clear that rare aquatic species habitat is not a priority. NHP would like to see a commitment by all municipalities to the protection of aquatic species habitat, specifically for open space, buffer widths, impervious surface limits, and floodplain restrictions.	Appendix, MOA	The protection of water quality for not only water supply purposes but also the preservation of aquatic habitats is a priority of each of the communities within the study area. For example, the Town of Garner protects the Swift Creek/Lake Benson watershed with 100 foot buffers which start outside the 100 year floodplain. The area protected by this requirement makes up approximately 65 percent of Garner's jurisdiction. The City of Raleigh has committed to all of the conservation measures in the Biological Opinion for the Dempsey Benton WTP that include additional conservation and land preservation actions within the Swift Creek watershed. The City has and is currently making progress on several of the conservation measures including the finalization of biological and water quality surveys in Swift Creek, the implementation of the minimum flow release from Lake Benson, the preservation of more than 312 acres of land along Swift Creek above Lake Benson and within the Steep Hill Creek corridor. The City has also successfully removed one package WWTP from operation and discharge to Swift Creek and another WWTP removal is currently being planned. A letter to the USACE on the progress on the conservation measures will be added to the Appendix.
29 (cont'd)			Appendix, MOA	The City of Raleigh and its consultants are currently working with both Wendell and Zebulon to identify appropriate environmental protective strategies for their jurisdictions to protect the mussels in the Little River. The MOA recognizes that Wendell and Zebulon may need more protective measures for federally endangered aquatic species protection. As indicated above, the local governments are committed to open space protection and each has developed an open space plan. The plans are being implemented through floodplain and riparian buffer protection, open space requirements for new development, and land purchases.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
30				
31	**DWQ Basin wide Planning Unit and SEPA Program: *Hannah Stallings***	Pages ES-2 and 1-3: Please clarify whether each of the seven communities involved will individually authorize the proposed Plan by signing the MOA	MOA	The City of Raleigh and DENR will sign the MOA since the City is responsible for infrastructure planning. The City of Raleigh plans to have a separate agreement with each local government.
32		Pages ES-2 and 1-3 state the area covered in the Plan "includes each municipality's extra-territorial jurisdiction and urban service area" Middlesex needs to be included in the study area because receives its potable water from Zebulon's system. Also a news story in January 2008 said Zebulon is proposing to service a portion of Johnston County. http://www.wral.com/news/local/story/2364964 If so, this needs to be included as well.	N/A	Middlesex and a small portion of Johnston County do receive water from the City of Raleigh. However, the City is not responsible for any infrastructure outside Wake County and only provides the water to the County boundary. These local governments will need to develop an EA for their internal water infrastructure and will address secondary and cumulative impacts in those environmental documents.
33		The discussion on infrastructure on ES-2 does not include roads. Please clarify if SCI resulting from transportation infrastructure is covered in the Plan.	ES, 1	Per agency comments received during scoping, the City of Raleigh's and the merger communities' existing transportation conditions and future plans for transportation facilities are included in the SCI Plan. Although the mitigative measures described in the Plan will help minimize the SCI from transportation projects, the intent of the SCI Plan was not to cover transportation infrastructure. The Plan will clarify this point, and the MOA will specifically indicate that the Plan is applicable to the environmental review of utility infrastructure projects only.
34		Page 1-1: Please change the references to definition for secondary and cumulative impacts to 15A NCAC 01C .0103(20) and 15A NCAC 01C .0103(a), respectively. Also, please change the quoted definitions accordingly.	1	The definitions and references will be changed to 15A NCAC 01C .0103(20) and 15A NCAC 01C .0103(3).

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
35		Page 1-2 states "Inclusion of known infrastructure plans in one document provides a holistic review of growth projections for the City's service area and infrastructure being designed to support growth." Please clarify whether the plan will cover only "known" infrastructure projects (Appendix C) or whether it will cover **all** water, wastewater and transportation projects pursued by Raleigh and the merger communities as they relate to the 10-year planning horizon and the 4-year projections.	Appendix C	The Plan covers all utility infrastructure that is needed to support the population projections and land use plan. The specific locations of this infrastructure may not be known at this time. The City's CIP map shows only planned projects over a 5-year period; the written part of the CIP includes 10 years of projects. The CIP is updated annually. The CIP will be included in Appendix C.
36		Clarify whether or not the plan will include transportation projects in the municipal boundaries carried out by the State. If so, perhaps NCDOT should be a party to the MOA.	MOA	The SCI Management Plan is based on the local governments' land use plans. These plans account for planned NCDOT roadways. However, the City of Raleigh has no jurisdiction over NCDOT, and NCDOT will not be a party to the MOA. In addition, the MOA will specifically indicate that the Plan is applicable to the environmental review of utility infrastructure projects only.
37		The Falls Lake and Little River watersheds should be brought within the jurisdiction of the Plan since the municipalities derive benefit from the quantity and quality of water in these watersheds. Wake County's cooperation for the protection of this area and it should be made a partner since it will be called on to enforce regulations (address throughout document). SCI will occur in these two watersheds with or without infrastructure projects or central water and sewer (second paragraph of section 5). due to impacts from future growth.	N/A	The local governments do derive benefit from Falls Lake and the Little River. However, they have no jurisdiction over these watersheds, except for the portion within the study area. Thus, the watershed areas outside the Plan study area will not be included in the SCI Plan. Wake County does no infrastructure planning (other than supporting municipal planning processes), permitting, construction, operation, or maintenance. Thus, Wake County is not expressly included in this plan. However, the County does have jurisdiction within the Urban Services Areas of the municipalities. Wake County's mitigation programs are described in Section 7, Appendix B and Appendix K. No changes have been made to the document.
38		All watershed protection ordinance should be uniform across municipalities.	N/A	Each municipality is unique and will adopt ordinances to meet their needs while protecting the environment. Uniform ordinances will not be set throughout the study area.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
39		Responses to DWQ's scoping comments indicate that the report will organize the description of the existing environment in the Study Area by watersheds and discussion of impacts by municipality (pg 2 of Appendix A). However, page 1-5 states that the discussion of impact will be organized by watershed. Please clarify.	1	The scoping document response indicated that the mitigation (Section 6) and the section which ties together the impacts and mitigation (Section 7) will be organized by local government which is in agreement with how Section 1 and the document is organized. The scoping document comment response also indicated that the existing environment (Section 4) will be organized by watershed which is consistent with Section 1 and the document. The section on impacts (Section 5) is organized by watershed, and the scoping document comments were silent on this. Section 1 will be modified to show that Section 7 is organized by municipality.
40		While Figure 2-1 shows the Wrenn Rd WWTPs, it is not mentioned in the text of section 2.1.1. Please clarify whether this WWTP is covered by the plan.	Figure 2-1	The Wrenn Road WWTP has been decommissioned. Figure 2-1 will be updated to depict the appropriate operational facilities within Raleigh's service area.
41		Please discuss any small package plants within the Study Area that operate independently of the merged infrastructure system.	2.1	A discussion of small individually permitted package plants will be added to the document.
42		Please clarify that the Neuse River WWTP project received in FONSI in the fall of 2006	2.1.1	This will be added to the text in Section 2.1.1 regarding the WWTP expansion to 75 mgd.
43		Please provide the same level of detailed information on other WWTPs within the Study Area as provided on the Neuse River WWTP in section 2.1.1.	2.1.1	This detail will be added.
44		Explain what is meant by the statement on pg 2-1 "The City plans to expand and modify the Smith Creek WWTP." What is meant by "modify"? What is the current status of this project?	2.1.2	The statement will be rephrased to say "upgrade" rather than "modify". Much of the infrastructure at the plant will not need to be expanded just upgraded. The Smith Creek WWTP currently has a constructed capacity of 2.4 mgd, and the City plans to expand the constructed capacity to 3 mgd. They also plan improvements at the plant as described in Section 2.1.2.
45		Pg 2-1 states the Smith Creek WWTP "is already permitted to discharge 6 mgd and the expansion will increase its constructed capacity to 3 mgd." Please clarify whether "constructed capacity" means the treatment/discharge capacity of the facility.	2.1.1	The Smith Creek WWTP currently has an NPDES permitted discharge capacity of 6 mgd, but the current plant treatment capacity is only 2.4 mgd with plans to expand the treatment capacity to 3 mgd to utilize a greater proportion of the permitted discharge capacity. The statement will be clarified in the document.
46		Pg 2-2 states that the City plans to expand the Little Creek WWTP to 6 mgd by 2016, however previous meetings have discussed a planned discharge of 8 mgd for this facility. Please clarify.	2.1.2	The City plans to expand the Little Creek WWTP to 6 mgd as described in the Draft EA to be submitted to NCDWQ.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
47		Please clarify how the recent and continuing concerns of the Raleigh City Council will impact the future of any reclaimed water projects in the Study Area (address this in section 6.2.2.8 also).	N/A	City Council members have voiced concerns related to the capital investment necessary for the construction of the reclaimed water facilities as outlined in the Reuse Master Plan Update. The City Council members recognize the importance of water demand management alternatives that will offset the City's increasing potable water demands. Future reclaimed water will still be part of this alternative but the shape and form of how the Reuse Master Plan is implemented will likely change just like any other long term infrastructure planning project. Ultimately the Council seeks to provide the City's citizens with the optimal resource management alternative that is fiscally and environmentally responsible. No changes have been made to the document.
48		When will Zebulon's expanded reuse water distribution system be operational?	2.1.3	The City plans on the reuse system being operational in 2010.
49		Pg 2-2 states that "new subdivisions [in Zebulon] that intend to use water for irrigation of community areas are required to install separate taps for reclaimed water." DWQ recommends that it be mandatory that **all** irrigation within new subdivisions be with reuse water and not potable water.	2	A requirement that all new subdivisions must utilize non-potable water for irrigation would be a challenge to mandate based on the way in which development will occur within the study area. New development within the study area will not necessarily occur in centralized areas near reclaimed water sources. Therefore the ability to connect all new subdivisions to a reclaimed water system will be limited based on the capital investment necessary for the construction of new reclaimed water pipelines to connect all new subdivisions. The City does plan to maximize the utilization of reclaimed water and will tie in all new subdivisions that are developed along the planned reclaimed water main lines, per the Reuse Master Plan Update. The Plan has not been modified.
50		DWQ recommends that the transportation portion of this plan be removed since Raleigh will not provide a regional authority for the administration of these projects within the Study Area.	2.3 MOA	Per agency comments received during scoping, the City of Raleigh's and the merger communities' existing transportation conditions and future plans for transportation facilities are included in the SCI Plan. Although the mitigative measures described in the Plan will help minimize the SCI from transportation projects, the intent of the SCI Plan was not to cover transportation infrastructure. The Plan will clarify this point, and the MOA will specifically indicate that the Plan is applicable to the environmental review of utility infrastructure projects only.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
51		Figure 2-1: Please explain the rationale for choosing to diagram planned wastewater lines with a greater than 12-in diameter.	2	Figure 2-1 & 2-2 include the existing wastewater and water infrastructure, respectively. The inclusion of lines smaller than 12 inches creates unreadable maps. The written portion of the CIP will be added to Appendix C to provide more information on planned infrastructure.
52		Pg 3-1 states the Raleigh's CIP considers "the long range objectives of the City." Please clarify how the objectives of each of the merger communities is figured into the CIP.	3	The City is required to meet specified levels of water and wastewater service to each merger community as outlined in each merger agreement. The City works with the local governments to identify infrastructure needs and includes it in the CIP.
53		Please consider adding management of biosolids to the goals of the wastewater project listed in section 3.	3	This will be added as a goal.
54		Page 3-2 states that Raleigh will "Encourage the use of reclaimed water for approved purposes when economically and technically feasible." DWQ recommends that the city **require** the use of reclaimed water where feasible	3	The City does plan to maximize the utilization of its reclaimed water infrastructure to offset potable water demands but will likely be limited in its ability to supply all new non-potable demands. The City's Reuse Master Plan Update completed in 2007 outlines the necessary infrastructure for the optimal management of the reclaimed water system.
55		Page 3-2: Please clarify what is meant by "Offer other means to move people, goods, and information."	3	Other means of transportation include sidewalks, greenways, bikeways, and public transportation. This will be clarified in the Plan.
56		Page 3-3: Please modify the text in the third paragraph to reflect the data in table 3-1 indicating that less than 783,000 will be served by the water and sewer systems by 2030.	3	The word "over" will be changed to "approximately".
57		Page 3-3 states " As demonstrated through its planning processes, the balance of growth and environmental protection is important to the City of Raleigh." Include merger communities in this sentence.	3	The sentence will be modified as suggested.
58		There are several areas of Figure 4-2 that are known to be incorrect, such as an overestimate of developed area in the Moccasin Creek watershed. What impact will incorrect information have on projections?	N/A	The 2007 Wake County parcel data layer utilized for the Wake County School System Long Range Plan 2005-2025 study was used for the entire study area to define the existing and future land uses. This parcel data source was used in order to provide a uniform and consistent data set for the study area land use analyses. Based on the nature of the planning data within this data layer an overestimation of the amount of developed land and the percent impervious may have occurred. Since this is a planning level document, the impact of estimated data should not be significant.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
59		The last two sentences on Page 4-14 state that "While the NWI does not map all jurisdictional wetlands, it is useful in terms of classifying types of wetlands and their approximate locations within the Study Area. It is important to note many changes that have taken place within the Study Area since these data were compiled ." Raleigh should not base the information for this Plan on faulty information. Please Clarify.	N/A	The data are not faulty; the NWI data are often used to estimate the locations and types of wetlands within an infrastructure project area. The note was simply to indicate that the data are not based on recent surveys. For this type of document it is unfeasible to collect field data for all proposed projects in relation to wetlands, so a surrogate desktop analysis was conducted utilizing the most current and available data. In this case the best available data for an analysis of the potential presence and impact on wetlands within the Study Area is NWI and hydric soils. During permitting, delineations will be completed to accurately assess the wetland impacts of a given project.
60		Please update Tables 4-12 and 4-13 and Section 4.10.1.1 based on the *Draft 2008 303(d) List,* available at http://h2o.enr.state.nc.us/tmdl/documents/B.Draft2008303dList.pdf. Also, please update section 5.10.1.2 as necessary based on the draft 2008 list.	4.10.1.1 and Tables 4-12 and 4-13	The tables and Section 4.10.1.1 will be updated.
61		The first paragraph of Section 5 states that the Plan results from an "Analysis of impacts [that] considers the proposed water and wastewater infrastructure planned for future land use conditions." Please clarify whether (1) reclaimed water is a separate category of infrastructure from wastewater and (2) if SCI transportation projects are covered by the proposed plan.	5	(1) The SCI impacts related to the planned reclaimed water infrastructure would be separate from the wastewater infrastructure. Reclaimed infrastructure would mimic that of the planned water infrastructure. Reclaimed water is utilized to offset potable water demands. (2) SCI of proposed transportation projects within the City of Raleigh's jurisdiction are not covered by this document; SCI related to transportation projects will be addressed in environmental documentation for individual transportation projects as necessary. The MOA will specifically indicate that the Plan is applicable to the environmental review of utility infrastructure projects only.
62		Page 5-17: the third paragraph states that, "To address the impacts of growth on air quality, Wake county is researching and developing alternative modes of transportation, such as regional rail services within the Study Area." If Wake County is not an active partner in the agreement, then its action should not count as mitigation.	5.8	Wake County develops or has funded large scale planning projects for the County where regional solutions will maximize the results. The Air Quality Task Force was one such project (others include the Watershed Management Plan, Growth Management Plan, the Open Space Plans, and the Groundwater study), and the City of Raleigh was actively involved with the Air Quality Task Force. The document will be clarified to indicate that the City of Raleigh and the merger communities have been actively involved in the Task Force.
63		Pages 5-20: In the first sentence of the third paragraph, please clarify whether reclaimed water lines are included in "sewer lines."	5.12	Reclaimed water lines will be added to the list of infrastructure which may cross streams.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
64		Page 6-1: The second sentence says that "The communities are working to address environmental concerns related to open space, water, wastewater, and stormwater." Please clarify whether transportation issues are addressed in this plan and whether it is also supposed to cover stormwater impacts as a separate category.	6 MOA	Per agency comments received during scoping, the City of Raleigh's and the merger communities' existing transportation conditions and future plans for transportation facilities are included in the SCI Plan. Although the mitigative measures described in the Plan will help minimize the SCI from transportation projects, the intent of the SCI Plan was not to cover transportation infrastructure. The Plan will clarify this point, and the MOA will specifically indicate that the Plan is applicable to the environmental review of utility infrastructure projects only.
65		Please consider adding the following to the list of Federal and State programs discussed I section 6.1: the 303(d) list; Protection of Wetlands, E.O, 11990; Isolated Wetland Protection; the Safety Drinking Water Act; the Clean Air Act; Floodplain Management, E.O 11988; and the Farmland Protection Policy Act.	6.1	A brief description of these programs will be added.
66		It would seem that each of the Watershed Plans in the Study Area would be consistent on impervious surface coverage area and buffer zones. Please explain why these measures are not uniform across municipal boundaries. Also, please consider making them consistent with one another. Please address this issue throughout the document.	N/A	Impervious surface limits and minimum buffer requirements are set by DWQ for water supply watersheds depending on the water supply watershed (WSW) classification. These requirements vary depending on the type of WSW. In addition, the Neuse River buffer rules vary from water supply watershed buffer requirements. Finally, some local governments have chosen to develop ordinances which exceed state requirements. Uniform policies will not be set throughout the study area.
67		Page 6-28 and elsewhere: Please clarify the inclusion of "plant and animal life" for needing clean and safe water.	8.4	This is a general statement that is currently within the zoning ordinance language for the Reservoir Watershed Protection Overlay district. This portion of the statement will be removed from the document.
68		Page 6-33: Please clarify who the conservation inspector is for the Flood Permits. Will the City's expansion of the area regulated under floodplain regulations change future land use plans presented in this Plan? If it will, then the City should not submit its final SCI Management Plan until it is finished.	N/A	The inspector is a City of Raleigh employee. The land use plan will not change; the City will review development applications for parcels in the floodplain areas in accordance with its ordinance. Local governments are continually updating plans, policies and ordinances and the City will not postpone submittal of the SCI Plan until all new policies are finalized. No changes have been made to the document.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
69		Section 6.2.2.8, Water Conservation strategies: While the City has set 70% as its threshold for requiring conservation, the Environmental Assessment prepared for the updated Falls Lake drought Contingency Plan calls for action by state, federal, and local agencies for such things as implementing conservation measures when water quality storage volume falls below 80%. It is recommended that the City Continue to work with Corps of Engineers to formulate a drought response model that will work in unison with one another. Also include how this section will be updated in light of impending legislation.	N/A	In the USACE Falls Lake Water Control Manual - Drought Contingency Plan (Updated March 2008) a threshold of 80 percent remaining water supply or water quality storage is identified as the trigger for the initiation of the plan starting with drought planning measures (i.e. water budget) and the notification of all stakeholders. At 70 percent remaining storage, the USACE and stakeholders discuss alternative management actions for Falls Lake; this level is in line with the City's water conservation threshold to require conservation during times of drought. The City is also taking an active role in the Neuse River Basin Hydrologic Model; this study may help to identify the most appropriate triggers for water conservation measures during times of drought. Any changes to the City's ordinances or policies will be updated in accordance with the MOA.
70		Page 6-40: DWQ recommends that the City provide its xeriscaping booklet on its website.	8.8	The City will work to add this to their Water Restrictions web page.
71		Page 6-42: Please clarify why reuse water can be used for "vehicle washing if the reuse water is either recaptured or is applied without a spray" but reuse water can be used for street cleaning, where it is sprayed from a moving vehicle and will enter the storm sewer system and not be recaptured.	8.8	Reclaimed water can be used for the purposes of street sweeping only with a vacuum-type cleaner, which would recapture reuse water used. The document will be updated to clarify.
72		Page 6-49: Please include Knightdale's Open Space and Greenway Plan in Appendix K.	Appendix K	An electronic version of the Plan (is part of the Comprehensive Plan) will be included in Appendix K.
73		Page 6-55: DWQ recommends that all municipalities affected by this Plan adopt Wake Forest's requirement that irrigation systems in new developments may not connect to the potable water system.	N/A	While this might be a desirable goal, this may not be a viable option for the entire service area. If there are no plans to install reclaimed water infrastructure and if groundwater wells are not a feasible option, due to limited yields, then the appropriate service must be supplied, which would be the use of potable water. The City does plan to maximize the utilization of the planned reclaimed water infrastructure in the most economically and environmentally sound manner. No changes have been made to the Plan.
74		Page 6-59: Please provide more detail on Rolesville's Community Plan and include it in Appendix K.	10.2 Appendix K	More information on Rolesville's community plan will be included; an electronic version of the Plan will be included in Appendix K.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
75		Page 6-65: Please clarify whether the 401 Bypass project will be built by the Town or State. If this is a State project, please clarify what impact Rolesville can have on the installation of bike paths and sidewalks. DWQ recommends that all municipalities adopt the objective to link themselves by public transportation alternatives.	10.10	The 401 Bypass is a State project. Rolesville's UDO requires the construction of bike paths, sidewalks, and pedestrian paths that link existing and future developments. Rolesville will play a role in the planning of the 401 Bypass with the NCDOT to ensure that the bypass conforms to the Town's ideals for pedestrian friendly roads within the Town's jurisdiction. The linking of communities via public transportation will be a regional effort. The implementation of public transportation will be limited by the distance and practicality of connecting the towns within the study area.
76		Page 6-67: Please include Garner's Comprehensive Growth Plan in Appendix K.	Appendix K	An electronic version of the Plan will be included in Appendix K.
77		Page 6-69: Please include Garner's Comprehensive Parks and Recreation, Open Space and Greenways Master Plan in Appendix K. Also, please provide more detail on this program so that one can tell how the bulleted needs are being addressed by the Town.	11.3	More detail will be provided. An electronic version of the Plan will be included in Appendix K.
78		Page 6-72: The second paragraph appears incomplete. Please amend as necessary.	11.2	The paragraph will be amended.
79		DWQ recommends that each municipality adopt a formal Municipal Water Allocation Policy.	N/A	Each of the merger agreements outlines the allocated finished water supply to each merger community based on each community's projected growth estimated from each town's land use planning. Each individual town allocates that supply within its own jurisdiction based on its unique needs. The merger agreement does outline the total available water allocation for each Town from the City of Raleigh. Each community manages its individual water supply based on its unique needs. The Towns will not develop formal water allocation policies. No changes have been made to the document.
80		Page 6-83: Please include Wendell's Comprehensive Plan and Unified Development Ordinance (even if in draft form) in Appendix K.	Appendix K	The Plan and draft Ordinance will be included in Appendix K.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
81		Page 6-87: a) DWQ recommends that each municipality sign a resolution of support and commitment to mitigative measures to address SCI associated with infrastructure improvements. b) Please clarify whether the resolution the Town signed also supports the SCI mitigation for impacts resulting from transportation projects. (Also address this in 6.2.7.4.2). c) Please clarify what/whose standards will be used to "pursue ordinance modification" for stream buffers.	N/A	a) Each community is committed to minimize the environmental impacts related to growth within its jurisdiction. Many have ordinances already in place that model this ideal. Wendell and Zebulon have recently signed a resolution to commit to improved environmental protection from SCI. If available, any proposed ordinance amendment language for communities within the study area and the timeline for the adoption of the amendment will be outlined in an attachment to the MOA. b) The intent of the Plan is not to address SCI related to transportation infrastructure projects, although the mitigation measures in place within the study area will assist in the minimization of SCI related to transportation projects. c) Wendell is currently working with the City and its consultants for the Little Creek WWTP EA to develop a set of ordinances and policies that will protect the Little River watershed downstream of the proposed dam from SCI. Currently, the Town does not know what the ordinances will look like, and a "standard" is not planned. No changes have been made to the document.
82		Page 6-87: DWQ does not recommend new development be allowed in a floodplain. DWQ recommends that each municipality adopt floodplain development ordinances like those of Wake Forest, outlined in Section 6.2.3.7.2.	N/A	Each of the municipalities currently have ordinances that are FEMA compliant, and many of these ordinances identify specific sensitive areas in which it does not allow development in the floodplain or significantly reduces the development potential of the floodplain. Each Town is unique and has designed its ordinances to meet its needs and protect the environment. No changes have been made to the document.
83		Page 6-87: DWQ recommends that each municipality require that new and replacement water supply systems and wastewater collection systems be designed to minimize or eliminate infiltration of floodwaters.	6.2.11	It is in the City of Raleigh's best interest to minimize infiltration and inflow (I&I) into the wastewater system, and to the greatest extent practicable the City tries to locate sewer lines outside of areas that are influenced by regular flooding. The City also actively monitors and undertakes projects to minimize I&I, such as the construction of all manholes above the 100-year floodplain, a sewer line rehabilitation and replacement program, and a beaver management program to minimize flooding resulting from the damming of waterways in areas in proximity to City sewer lines.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
84		Page 6-87: DWQ discourages on-site septic tank systems. Please clarify who in the Wendell service area relies on an on-site system. Please clarify why an on-site systems within the service area have not been required to connect to the municipal wastewater system.	N/A	Any development that occurs within the Wendell Planning Area that is outside its current ETJ will not be connected to the wastewater system. Therefore if these areas become developed they will need to build onsite wastewater systems. No changes have been made to the document.
85		Page 6-87: While text in this section says that "The ILA requires the 100 foot riparian buffers be undisturbed in the floodplain of the Little River water supply watershed," text in 6.2.7.4.1 says that greenways and public parks are allowed in the buffer zone. Please clarify.	13.4	The ILA requires undisturbed buffers, but greenways and parks are allowed in the floodplain outside the buffer.
86		Page 6-87: When does Wendell expect to pass ordinance prohibiting development in the 100-year floodplain.	N/A	The Town Council has signed the resolution and is working with the City and its consultants to develop ordinances and policies to protect the floodplain. The Council must then approve the language and hold the required public review/comment process before an ordinance can be amended. There is no specific time frame for the adoption of an updated ordinance at this time. If specific information is known, it will be included in future versions of the document.
87		Page 6-89: Please include Zebulon's Comprehensive Plan in Appendix K. Please update the status of the Town's Plan. DWQ is not comfortable agreeing to Raleigh's SCI Management Plan if it requires Zebulon's Comprehensive Plan to be in effect.	Appendix K	An electronic version of the Plan will be included in Appendix K. Any changes to the Town's ordinances or policies will be updated in accordance with the MOA.
88		Page 6-92: DWQ recommends that all municipalities affected by the development of this SCI Management Plan adopt a similar Conservation Subdivision ordinance.	N/A	Many of the municipalities have pieces of the beneficial Conservation Subdivision ordinance within other ordinances, such as full protection of the 100 year floodplain and 100 foot buffers. Each Town is unique and has designed its ordinances to meet its needs and protect the environment. No changes have been made to the document.
89		DWQ recommends that Zebulon adopts a floodplain ordinance similar to that of Wake Forest.	MOA	Each Town is unique and has designed its ordinances to meet its needs and protect the environment. As part of the Little Creek WWTP EA, the City of Raleigh and its consultants are working with Zebulon to enhance watershed protection strategies which may include floodplain protection within its jurisdiction. The MOA addressed the need for more protective measures in the Zebulon that may include floodplain protection.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
90		DWQ recommends that all municipalities affected by this SCI Management Plan provide water conservation education material on their websites.	6	Water conservation information is included on the billing statement to each of the City of Raleigh water customers. The City of Raleigh has a water conservation webpage that has educational materials; each municipality could provide a link to this page.
91		Page 7-5: DWQ recommends that all municipalities affected by this SCI Management Plan require that environmental resources be inventoried before permits are issued.	N/A	As part of the Neuse River basin buffer rules, the Clean Water Act Sections 404 & 401, as well as the Endangered Species Act, parties responsible for development activities are required to identify wetlands, streams, extent of protected riparian buffers, as well as endangered species and their habitat (by means of it being illegal to "take", as defined in the ESA, such species or their habitat) and to comply with federal and state laws. Each Town is unique and has designed its ordinances to meet its needs and protect the environment. The Towns will not develop environmental survey requirements. No changes have been made to the document.
92		DWQ recommends that all of the merger communities limit nitrogen runoff from new development.	N/A	DWQ developed its NSW rules to protect the Neuse River estuary. In addition, NPDES SW Phase II rules require local governments to adopt an ordinance to limit nutrient loading in NSW watersheds (entire Neuse River basin is NSW). The smaller local governments will not implement the Neuse NSW rules since they have minimal impact on the Neuse River estuary, but they will comply with Phase II for impervious surface thresholds and the implementation of stormwater BMPs. No changes have been made to the document.
93		DWQ recommends that the City's LID information be placed in a conspicuous place on its Planning department webpage.	N/A	Comment noted; the City will investigate adding this to their website.
94		Please clarify whether Zebulon's reuse program is separate from Raleigh's plan for this resource.	15.10	Zebulon started its reuse program before its utility merger with the City of Raleigh. The City now administers all water, wastewater, and reclaimed water infrastructure planning for each of the merger communities.
95		Please clarify that using reclaimed water for non-potable purposes reduces water supply withdrawals in non-drought times, too.	15.10	The statement will be clarified to include a discussion of the positive impacts that using reclaimed water can have during non-drought periods.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
96		Please clarify why the maps in Appendix C are only project water and sewer projects to the year 2012 when this SCI Management Plan will (presumably) cover impacts for 10 years. It is recommended that these maps be changed to reflect more long-term infrastructure plans.	Appendix C	The plan covers all utility infrastructure that is needed to support the population projections and land use plan. The specific locations of this infrastructure may not be known at this time. The City's CIP map shows only planned projects over a 5-year period; the narrative portion of the CIP includes projects over a 1-year period. The CIP is updated annually.
97		All merger agreements should be on the CD. Only Rolesville's could be found. Again, any and all local ordinances mentioned to curb SCI should be included on this CD.	Appendix C	All the merger agreements will be included on the CD. Plans and ordinances will also be included.
98				
99	**NC Division of Water Resources: *Fred Tarver***	The Town of Middlesex is not included as a designated study area in Figure 1, however it is used as a justification for expansion. CORPUD has responded that Middlesex will develop it's own appropriate environmental documents. CORPUD's June 21,2007 scoping letter states that "the Little Creek WWTP will be expanded....to serve growing towns of Zebulon and Wendell in Wake County and Middlesex in Nash County...." Additionally rules 15A NCAC 01C .0103 (3) and (20) define SCI as "environmental impacts resulting from incremental effects of an activity when added to other past, present, and reasonably foreseeable future activities **regardless of what entities undertake such other actions.**" and "indirect impacts caused by and resulting from a specific activity that occur later in time or **further removed in distance** than direct impacts..." where the only limitation is that the impacts be "reasonably foreseeable." Therefore, DWR requests that the SCI Plan include Nash county and similar areas outside CORPUD's service area but that are serviced by CORPUD infrastru	N/A	Middlesex and a small portion of Johnston County do receive water from the City of Raleigh. However, the City is not responsible for any infrastructure outside of Wake County and only provides the water to the County boundary. These local governments will need to develop an EA for their internal water infrastructure and will address secondary and cumulative impacts in those environmental documents. The Plan has not been changed.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
100		DWR also requests that the plan discuss whose development ordinance have priority when an extraterritorial jurisdiction (ETJ) extends into an adjoining county and how an extension of service to an outlying community counts towards the long-term allowable growth limit on a merger community.	N/A	The municipality's regulations will take priority over the County regulations, (N.C.G.S. 160A-360 Article 19). Each of the merger agreements outlines the total available allocated finished water supply to each merger community. Each individual community allocates that supply. If a community extends utility services to other local governments, that community's allocation of services from the City of Raleigh remains unchanged and the community is allocating part of its allocation to another local government. The Plan has not been modified.
101		DWR requests that the plan be expanded to consider upstream and downstream secondary and cumulative indirect impacts outside the service area.	1	Section 1 will be modified to indicate that roadway infrastructure is shared with neighboring counties. Thus, some growth may extend beyond the County line, but Raleigh and the merger communities have no jurisdiction in those areas. Development will occur in alignment with ordinances and policies within those other jurisdictions. These other local governments are not included in this Plan.
102		Figures 4-1, 4-2 and 5-1: DWR requests that the maps include boundary lines for each municipal limit, ETJ and urban services area (USA) as delineated in Figure 1-1.	4 + 5	We will test your suggestion to see if the maps are legible when this information is added. (Maps not legible so remained the same).
103		Page 1-2, Section 1.0. paragraph 5: The title of the plan is misleading given the stated purpose of the plan " to address the secondary and cumulative indirect impacts for planned infrastructure." Since only half of cumulative impacts are being considered in the plan, i.e. indirect, the title should be modified to accurately represent this narrow focus.	1	The title will be reviewed with City of Raleigh and senior DENR members while the MOA is reviewed. (DENR indicated that title should not be modified as suggested).
104		Pages 1-3, Section 1.0, paragraph 1: DWR requests that the draft memorandum of agreement be included with the draft plan prior to submittal to the State Clearinghouse.	1	The MOA will be completed before the Plan is submitted to the State Clearinghouse.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
105		Pages 1-3, paragraph 2: The plan states that the "…EIS does not require a determination of whether impacts are significant." And, that "[no quantitative analysis was performed to determine the level of significance of the impacts." However, Rule 01 NCAC 25 .0603 (6)(a) through (c) require that the EIS include "direct effects and **significance**," "indirect effects and **significance**," and "cumulative effects and **significance**"	1	The document will be rephrased; EIS's do not require that impacts be mitigated to a "no significant" level.
106		Pages 1-5 paragraph 2: DWR requests that the Fall's lake watershed be included due to it's expected inclusion on the 303(d) list and the E.M. Johnson Water Treatment Plant's expansion. DWR requests that the upper Little River watershed be included due to proposed construction of the dam on the Little River. The plan should also consider impacts to the upper Little River watershed associated with land use in Franklin County, upstream of the proposed reservoir.	1.3	The Falls Lake and Little River Reservoir watersheds are not included other than where local government ETJs extend into those watersheds (including the City of Raleigh EM Johnson WTP site). The City and merger communities will share roadway infrastructure, and some development may occur without water and sewer service. Development outside of the local government's ETJs will be in accordance with Wake County's ordinances which are included in Appendix B and K. The draft 2008 303(d) list will be used to update the impaired waters lists in the document.
107		Page 2-3 & Page 6-27, paragraph 1: CORPUD's lack of regulatory authority over transportation and development projects does not negate the consideration of a project's SCI as they relate to impacts associated with CORPUD projects.	2.3 + 6.2.2.4	The Plan does not cover future transportation infrastructure projects and this will be clarified in the document. The local government's land use planning, which serves as the foundation for this Plan, was developed using future transportation planning and the SCI mitigative programs in place do minimize the impacts from growth related to transportation projects. The MOA will specifically indicate that the Plan is applicable to the environmental review of utility infrastructure projects only.
108		Page 4-37 paragraph 2: The American eel is a catadromous species.	4.12	The change will be made.
109		Page 5-17 & page 5-20: These sections fail to address the secondary and cumulative indirect impacts of dams.	5.10. + 5.12	The impacts of dams will be added to the document.
110		Page 5-19; This section should include Falls Lake and any other subject waters not provided but presently included in the draft 2008 303(d)list and expected to be included in the final list. The plan should address "…possible conflicts between the proposed activities and the objectives of federal, state, and local plans, policies, and controls for the affected area." (01 NCAC 25 .0603 (6)(f))	5.10.1.2	The draft 2008 303(d) list will be included in the document. The City of Raleigh and the merger communities will cooperate with DWQ on any future TMDLs in these waters.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
111		Page 5-22, paragraph 5: The biological opinion (BO) for the dwarf wedgemussel in Swift Creek below Lake Benson dam, included in Appendix J, is referenced. DWR is particularly concerned with consultation and establishment of a gauging station on Swift Creek. Please provide the status of the gauge system and other milestones toward compliance with the BO.	Appendix J, 5.13.1	An April 14, 2008 letter from the City of Raleigh to the USACE outlines the status of the City's progress on each of the conservation measures required in the BO. This letter will be included in Appendix J. The City has also completed and submitted to USFWS the Sampling and Monitoring Plan Baseline Data Report.
112				
113	**NC Wildlife Resources Commission: *Shari Bryant***	WRC feels that periodic reports should be submitted to document any additions, deletions, or changes that may occur to infrastructure projects or protective measures (e.g. riparian buffers). Also, there should be a provision that allows the SCI Plan to be re-evaluated and updated if significant changes in aquatic or terrestrial wildlife resources are observed such as a change in listing of a species, declines in population, or changes in habitat that could be detrimental.	N/A	The MOA will outline reporting requirements and frequencies, when the document should be updated, and when more frequent updates may be required. The MOA will be completed before the Plan is submitted to the State Clearinghouse.
114		A table documenting each watershed and the municipalities that fall within it would be helpful.	4	A table will be added.
115		Page 2-3: While Raleigh does not have jurisdiction over transportation projects, these projects could significantly affect the rate and degree of development within each local municipality.	2.3	The land use planning and population projections used by the City for utility infrastructure planning does reflect proposed transportation projects. However, transportation infrastructure will not explicitly be included in the SCI document; it will be covered as it is currently. The MOA will specifically indicate that the Plan is applicable to the environmental review of utility infrastructure projects only.
116		Page 5-1 states "Growth in the City of Raleigh and the merger communities has and will be facilitated by transportation facilities including the NCDOT development of I-540 and the US-64 bypass…Direct and SCI of these roadway projects have been addressed by the NCDOT." If SCI for these projects has been addressed by NCDOT, a summary of findings and any mitigation measures implemented could be included as an appendix.	5	If available, the environmental documents for I-540 and the US 64 Bypass will be included on CD in the appendix. We are currently attempting to acquire these documents from the NCDOT. (The documents were not available electronically).

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
117		Figures 4-1, 4-2, 5-1, and the tables with generalized existing and future land uses and the tables with a summary of existing local programs in Section 6 were found to be very helpful.	N/A	This comment has been noted.
118		Neuse River Basin Buffer Rules provide for a 50-foot riparian buffer on perennial and intermittent streams. In the document (p. 6-29), Wenger was cited as saying "30 feet of forest buffer is sufficient to shade a stream and moderate temperatures for smaller streams that do not support cold water fisheries." However, the Wenger paper actually states that 30 foot buffers are an absolute minimum width and that forested buffers (not grass) are vital to health of stream biota. WRC continues to recommend a native forested buffer at a minimum of 100-foot for perennial streams and 50-foot for intermittent streams. In watersheds that support federally listed species WRC recommends native forested buffers at a 200-foot minimum for perennial streams and 100-foot for intermittent streams.	MOA	Wenger does state that the 30 feet of forested buffer is an absolute minimum width, but on page 36 of the Wenger paper there is a discussion on the findings that to maintain stream temperatures riparian buffers must be at least 10 m (30 ft) wide, forested, and be continuous along all stream channels to maintain proper stream temperatures. The document has not been updated. The recommended width of a riparian buffer should be dependent on the riparian buffer function and other controls that are implemented in the watershed. In general, wider buffers provide greater protection but at diminishing returns. For general water quality protection, the zoned buffer as outlined in the Neuse rules, is adequate. All communities are compliant with the Neuse River buffer requirements. The local governments also protect 100 foot riparian buffers along water supply watersheds. Many of the communities have identified sensitive watersheds (either for threatened species or water supply) where more significant buffer protection is required. These include:
118 (cont'd)			MOA	1. Garner - Swift Creek/Lake Benson watershed 100 foot buffer protection. For portions of the watershed, the riparian buffer begins outside the 100 year floodplain. The Swift Creek/Lake Benson area makes up approximately 65 percent of Garner's jurisdiction. 2. Raleigh - Falls Lake, Richland Creek watershed protection districts - 100 foot buffers 3. Wake Forest & Rolesville - 100 foot buffers on all perennial streams, Wake Forest 50 foot buffers on all intermittent streams. Both communities protect the 100 year floodplain and Wake Forest excludes development in the 500 year floodplain. 4. Wendell and Zebulon are the only two communities with jurisdiction within the Little River watershed below the dam site for the reservoir. These local governments are compliant with the Neuse River riparian buffers. 5. Mocassin Creek - Zebulon is the only municipality with jurisdiction in the Moccasin Creek watershed and meets the Neuse Riparian buffer requirements.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
118 (cont'd)				Currently, the City of Raleigh and its consultants are working with Wendell and Zebulon to enhance riparian buffer and floodplain protection strategies within their jurisdictions. The MOA has specifically addressed this issue.
119		Some local municipalities do not allow development in the floodplain others require structures to be raised, and others comply with FEMA regulations which are not designed to protect natural resources. City of Raleigh allows 50% development. We recommend that local governments prohibit development within the 100-year floodplain. Undeveloped floodplains protect aquatic ecosystems (Junk et al. 1989) and provide sediment trapping (Palik et al. 2000)	MOA	We concur that floodplain protection does protect aquatic ecosystems. Most of the municipalities have floodplain protection ordinances to protect the floodplain, but they vary in their approach and extent of protection as described below. 1. Wake Forest & Rolesville both protect the 100 year floodplain and Wake Forest excludes development from the 500 year floodplain. 2. Garner protects the 100 year floodplain within the Swift Creek/Lake Benson watershed portion of the town's jurisdiction. Development in the floodplain in other areas of the Town is rarely allowed. 3. The City of Raleigh limits development of the floodplain to 50% in order to encourage redevelopment. Due to the urbanized nature of a majority of the City's jurisdiction, much of the floodplain has been historically developed and is currently being redeveloped. 4. The Town of Knightdale has preserved a portion of its major floodplains through zoning. It includes an Open Space Preserve (OSP) zoning district along major creeks. This zoning district is intended to permanently protect natural and/or environmentally significant lands. 5. Wendell and Zebulon's flood protection ordinances are designed to protect life and property (FEMA). Currently, the City of Raleigh and its consultants are working with the towns of Wendell and Zebulon to enhance their floodplain protection strategies within their jurisdictions as part of the Little Creek EA process. The MOA addresses Wendell and Zebulon, and future ordinances may include floodplain protection.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
120		Open space protection varies among local governments from 5 percent to approximately 40 percent. Page 4-3: The 'Open Space" category does not appear to represent all open spaces and should perhaps be renamed to "Parks and Protected Lands." Also, riparian buffers and floodplain open space are contained in other land use categories, therefore it's difficult to determine whether riparian areas and FEMA regulated floodplains represent 9% or 16% of the Study Area.	4.3	The 5 to 40 percent open space protection is usually in addition to open space protected by riparian buffer and floodplain protection ordinances. The Open Space category will be renamed to "Open Space, Parks, and Protected Lands". A clarification on the percentage of land area covered by the riparian buffers (7 %) and floodplain (9%) individually and cumulatively (13%) will be included in the document.
121		Many of the local municipality ordinances allow active recreational areas to serve as part of open space requirements. Section 5.3 (p. 5-15) indicates future open space will likely be fragmented except along riparian buffers and floodplains, which will provide habitat corridors. This statement further supports WRC's recommendation for protecting wide riparian corridors and the 100-year floodplain.	MOA	See comment response #118 and #119
122		WRC recommends that impervious surfaces are limited to less than 10% of a watershed and less than 6% for watersheds that support federally listed aquatic species.	Sections 7-14	Many of the studies upon which the 10 percent recommendation is based were on watersheds that were developed without riparian buffer/floodplain protection and proper erosion and sediment controls. The City of Raleigh and Town of Garner fall under the Neuse stormwater requirements. As such, they require stormwater BMPs on any development which exceeds 15 percent imperviousness. The Town of Knightdale requires that post-construction runoff volume be equivalent to pre-construction runoff volume for low density development (<24 percent imperviousness). In water supply watersheds, imperviousness is limited. For example the communities with a WS-II classification within their jurisdiction maintain the requirements of 6 percent impervious surface in the critical area and 12 percent in the remainder of the watershed. All of the communities are required to be Phase II compliant for impervious surface thresholds and the implementation of stormwater BMP's.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
123		Tables 4-5A to 4-5J (p. 4-7 to 4-13) shows that all watersheds already exceed 10% in which we encourage stormwater control measures to be implemented in order to mimic a hydrograph consistent with 10% impervious surface (6% in watersheds with federally listed species).	Sections 7-14	See Comment Reponses #122
124		Page 5-19 indicates that 303(d) listed streams are already in urbanized watersheds and are suffering water quality stresses, further supporting the need for increased stormwater control measures. WRC is encouraged by the City of Raleigh's initiative to adopt higher stormwater standards (Section 6.2.2.7 p 6-36)	5.10.1.2	This comment has been noted.
125		Protecting wider buffers and floodplains would allow for greater groundwater recharge.	N/A	We agree with the comment.
126		WRC is encouraged to see LID methodologies are being considered as these would minimize groundwater and stream base flow impacts	7.10.1	This comment has been noted.
127		Page 4-40 indicates that dwarf wedgemussel has been found in Swift creek, little River and Buffalo creek. It should be noted that the species has also been documented in Middle Creek and Moccasin Creek in Johnston County. Although dwarf wedgemussel has not been documented in these streams in Wake County, development activities have the potential to impact downstream habitat. Also, Tar spinymussel, a state and federal endangered species has been documented in White Oak Creek.	4.13.1	The text will be updated to reflect comment.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
128		Page 5-14: It should be noted that many of the water supply watershed areas do not correspond with the Significant Aquatic Endangered Species Habitat areas. It does not appear that comparable protective strategies are applied to any areas outside of water supply watershed areas, which in most cases are where the most sensitive aquatic species are found.	5.3	The protection of water quality for not only water supply purposes but also the preservation of aquatic habitats is a priority of each of the communities within the study area. For example: The Town of Garner protects the Swift Creek/Lake Benson watershed with 100 foot buffers which start outside the 100 year floodplain. The area protected by this requirement makes up approximately 65% of Garner's jurisdiction. The City of Raleigh has committed to all of the conservation measures in the Biological Opinion for the Dempsey Benton WTP that include additional conservation and land preservation actions within the Swift Creek watershed. The City has and is currently making progress on several of the conservation measures including the finalization of biological and water quality surveys in Swift Creek, the implementation of the minimum flow release from Lake Benson, the preservation of more that 312 acres of land along Swift Creek above Lake Benson and within the Steep Hill Creek corridor, and also the City has successfully removed one package WWTP from operation and discharge to Swift Creek and another is currently being planned. A letter to the USACE on the progress on all of the conservation measure will be added to the Appendix.
128 (cont'd)			5.3	The City of Raleigh and its consultants are currently working with both Wendell and Zebulon to identify appropriate environmental protective strategies for their jurisdictions to protect the mussels in the Little River. If available, any information on proposed ordinance changes including ordinance language and a timeline to adopt the amended ordinance will be included in an attachment to the MOA. As indicated above, the local governments are committed to open space protection and each has developed an open space plan. The Plans are being implemented through floodplain and riparian buffer protection, open space requirements for new development, and purchase.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
129		Page 7-11 It should be noted that the Little River water supply watershed designation encompasses the area upstream; and it does not appear that the protective measures (i.e., ILA) being implemented upstream of the proposed dam are proposed to be implemented downstream of the dam. Also pg 1-5 implies that a reclassification of the stream downstream would lead to less protective measures, jeopardizing the rare mussels located downstream of the dam.	7.13 + 1.3 + MOA	Wendell and Zebulon are the only 2 municipalities with jurisdiction in the Little River watershed below the dam site. As part of the Little Creek WWTP EA, the City of Raleigh and its consultants are currently working with both Wendell and Zebulon to identify appropriate protective strategies for their jurisdictions. In addition, Wendell has a Town Council signed resolution of support and commitment to mitigative measure to address SCI, including increased riparian buffer widths and full protection of the 100-year floodplain. If available, any ordinance amendment language for Wendell or Zebulon and the timeline for the adoption of the amendments will be outlined in an attachment to the MOA.
130		There are approximately 147 miles of Significant Aquatic Endangered Species Habitat in the Study Area. Most of this is in Little River, Moccasin Creek, and Swift Creek watersheds. Dwarf wedgemussel has been documented in Buffalo Creek and Middle Creek. We offered several suggestions during scoping to minimize impacts to federal listed species. Local governments have protective programs in place, but they do not appear to be adequate comparable to those suggested in WRC scoping comments of the WRC SCI Guidance Memo.	MOA	All of the merger communities' ordinances meet and in some instances exceed the necessary State and Federal regulations. The City itself has also committed itself to conservation and preservation measures to help protect aquatic species habitat in the Swift Creek watershed as outlined in Comment Response #128. Within the study area the communities have in place or are working towards greater environmental protection. If any of the merger communities decide to enhance the environmental protection of their ordinances, the information will be provided to the agencies through the biennial report required in the MOA. The MOA also specifically recognizes that measures in the Little River downstream of the proposed dam may not be adequate.
131		Pg 6-87 indicates the Town of Wendell has signed a resolution of support and commitment to mitigative measures to address SCI including an agreement to pursue ordinance modification, however it is not clear what these modifications may be or how they'll affect the watersheds supporting federally endangered species. Also page 6-85 indicates the Town of Wendell adopted a Comprehensive plan that include recommendations to protect and preserve developable lands, including that that area within the WRC recommended 200 foot buffer in Buffalo Creek and the little River watershed. WRC is pleased to see this initiative, but the time frame for accomplishing this is not clear.	MOA	This comment has been noted. The Town of Wendell has a Town Council signed resolution of support and commitment to mitigative measure to address SCI, including increased riparian buffer widths and full protection of the 100-year floodplain. The MOA recognizes that protective measures may not be adequate for the Town of Wendell.

Comment No.	Agency	Agency Comment	SCI Section	Response to Comment
132		There is discussion in the SCIMP regarding the implementation of more protective measures, it is not clear whether these measure would be adopted or what conditions would require their implementation. This is were the WRC feels the time period of the SCIMP is valid, periodic reports and what triggers a re-evaluation of the protective measures within the document.	MOA	The City will be required by the MOA to produce biennial reports which will identify significant changes in actual land use or utility infrastructure that was not anticipated or described in the Plan. Changes in the City's or merger communities' land use plans; sediment and erosion control programs; stormwater programs; ordinances related to buffers and open space requirements; and other major management measures must be described. The time frame and reporting requirements related to the Plan are outlined in the MOA.
133		WRC continues to question whether the measures included in this document are sufficient to protect water quality and aquatic and terrestrial wildlife resources within the Study Area under existing conditions, let alone build out.	MOA	We believe that the ordinances are sufficient with the possible exception of the Little River downstream of the proposed dam. The City of Raleigh and its Little Creek WWTP EA consultants are working with the Towns of Wendell and Zebulon to develop ordinances and programs that will protect the Little River watershed. This issue is specifically addressed in the MOA.
134		WRC continues to have concerns on SCI in the Study Area, particularly in those watershed that support federally listed aquatic species. WRC would prefer each of the local municipalities adopt the mitigation measure outline in the WRC SCI Guidance Memo, the WRC will accept the Sampling and Monitoring program with the following change: The addition of two sampling locations on Moccasin Creek - one in Wake County above US 64 and one in Johnston/Nash County downstream of Zebulon.	N/A	The City of Raleigh will consider the addition of the sampling sites after further conversation on this matter with the NCWRC. The City is concerned that data collected from sampling sites on Moccasin Creek, although would provide beneficial biological and water quality data, would not provide any conclusive evidence of a beneficial or harmful relationship between land use practices and stream quality within the Raleigh service area. The watershed for the portion of Moccasin Creek in the City's service area is partially within Franklin County and outside the Zebulon's jurisdiction therefore the City has no control over the land use practices in this portion of the watershed.
135		WRC also encourages the local municipalities to consider additional measures to address issues of development and its impact on water quality and aquatic and terrestrial wildlife habitat in those watersheds that do not support federally endangered species. Adopting ordinances that protect forested riparian corridors and the 100 year floodplain and that adequately treat stormwater. These measure can be found in the WRC SCI Guidance Memo.	MOA	Most of the local governments have comprehensive ordinances and policies which when reviewed together protect the environment. The City of Raleigh and its consultants for the Little Creek WWTP expansion EA are working with both Wendell and Zebulon to identify appropriate environmental protective strategies for their jurisdictions, specifically in reference to the Little River watershed. The MOA specifically addresses this area. Any updates to environmental ordinances and policies will be reported in the biennial updates required by the MOA.

Agency Comments - May 2008

NCDENR

North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary

May 30, 2008

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Ms. Ruth Swanek
Project Manager
CH2MHILL
3201 Beechleaf Court
Suite 300
Raleigh. N.C. 27604

Re: Draft Secondary and Cumulative Impacts Management Plan for City of Raleigh and Towns of Wake Forest, Rolesville, Garner, Knightdale, Wendell and Zebulon

Dear Ms. Swanek:

The Department of Environment Natural Resources has completed its internal review of the referenced project.

The department appreciates the work and the details presented in the management plan and the measures that have been incorporated to offset growth impacts. A number of concerns have been identified by DENR agencies. Questions continue to be raised concerning, stormwater, potential development within the 100-year floodplain, open space and buffer widths. Also, questions have been raised concerning water quality and whether the measures being recommended will sufficiently protect rare aquatic species.

The department feels additional efforts are needed in reaching consensus. Our primary interest is to keep communication open and work together in reaching a balance that will allow the SCI Management Plan to move forward. It is recommended that you work directly with our commenting agencies in addressing the attached comments. Another approach would be to schedule a meeting with both state and federal agencies prior to revising the plan.

Thank you for the opportunity to review.

Sincerely,

Melba McGee
Environmental Review Coordinator

Attachments

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Michael F. Easley, Governor

William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Coleen Sullins, Director
Division of Water Quality

MEMORANDUM

From: Jennifer M. Haynie
Environmental Assessment Coordinator
Construction Grants and Loans Section

To: Melba McGee
Office of Legislative and Intergovernmental Affairs

Date: May 22, 2008

Subject: Comments on the City of Raleigh Secondary and Cumulative Impacts Management Plan

The purpose of this memorandum is to provide comments on the City of Raleigh Secondary and Cumulative Impacts Management Plan (SCIMP). If you have any questions, please contact me at 715-6223 or at jennifer.haynie@ncmail.net.

I. Introduction

1. Section 1.1 – SCI Management Plan Process: The first statement of the second statement might not be the best statement to make.

2. Section 1.3 – Project Study Area

   a. The first sentence of the second paragraph states that a new reservoir will be opened to serve areas in Wake County. Provide the date that this reservoir is scheduled to open to offer readers a better idea of when water supplies will increase.
   b. Figure 1-1 and 1-2: These figures are so similar that it is difficult to tell the differences between them. Combine them into one figure.

II. Chapter 2 – Background and Description of Future Infrastructure Plans

1. Provide a figure that will show all planned major infrastructure projects (wastewater, reclaimed water, water, and transportation facilities) to provide the reader with a general idea of where the major projects will occur. This figure does not need to show all detail but instead should focus on large facilities such as wastewater and reclaimed water lines over 12 inches or highways that are four lanes or more.

2. Section 2.1 – Wastewater

    a. Section 2.1.1 – Existing Wastewater System

        i. To provide readers with more information about each of the wastewater treatment plants (WWTPs) discussed in the wastewater section, provide copies of their NPDES permits in an appendix.
        ii. Describe the Smith Creek WWTP in the same level of detail as the Neuse River WWTP so that the reader will have a similar understanding of the processes used at this WWTP.
        iii. Provide a description of the Little Creek WWTP that has a similar level of detail as the Neuse River WWTP.
        iv. When referencing the WWTPs for the first time, include the NPDES permit number so that the reader can locate copies of the permits in the appendices.

    b. Section 2.1.2 – Future Wastewater Systems: The first sentence of the second paragraph reads "In 2006, the permitted capacity of the Little Creek WWTP was re-rated to 2.2 mgd…" Instead of using re-rated, use a phrase such as "was authorized to expand to," as this phrase better defines the action that occurred.

    c. Section 2.2 – Potable Water: Section 2.2.1 – Existing Water System

        i. The last sentence of the second paragraph reads Figure 2-2 illustrates the water infrastructure…" Add "existing" before "water infrastructure" to further clarify what is being shown in the figure.
        ii. In the third paragraph, provide an approximate date to show when the Little River Reservoir is expected to be in service. This will show when water supplies will be expected to expand.

3. Section 2.3 – Transportation

    a. While the City of Raleigh may not be able to control mitigative measures for projects that are under the purview of the other towns, it can require mitigative measures for its own projects. Therefore, existing transportation conditions and future plans for transportation facilities specifically within the City of Raleigh should be discussed.
    b. The last sentence of the first paragraph implies that the entire transportation plans are within Appendix D whereas only summaries are provided. Consider amending this sentence to more accurately reflect the content of Appendix D or provide the transportation plans either via hard copy or CD.

III. <u>Section 3 – Purpose and Need for Proposed Infrastructure</u>

1. Consider providing a copy of the City of Raleigh's Capital Improvement Plan (CIP) on CD in an appendix since the information provided by the CIP feeds into this document.
2. Add the removal of septic systems from service as a goal since this is the reason for a lot of wastewater infrastructure installation. Additionally, add that removing septic systems from service also improves groundwater quality.
3. When discussing the goals of wastewater reuse projects, use the term "reclaimed water" instead of "water reclamation," as the latter implies raw wastewater usage instead of treated wastewater.

IV. **<u>Section 4 – Description of Existing Environment in Study Area</u>:** Section 4.2 – Soils

1. In Table 4-2, provide what percentage of each watershed is hydric soils.
2. Tables 4-3a through 4-3j seem redundant when discussing the more detailed land uses found in Tables 4-5a through 4-5j. Consider removing Tables 4.3a-j.

V. **<u>Sections 6 – Mitigation of Secondary and Cumulative Impacts and 7 – Summary of Mitigation to Address Secondary and Cumulative Impacts</u>:** While the information provided in Section 6 is good, the chapter is too long. Instead, rearrange these two sections to have Section 7 first as a summary of the details and then split Section 6 into separate sections, one each for each municipality.

NCDENR
North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary

26 May 2008

MEMORANDUM

TO: Melba McGee, Environmental Coordinator
Office of Legislative and Intergovernmental Affairs

FROM: Sarah McRae, Freshwater Ecologist
NC Natural Heritage Program

SUBJECT: Comments on the City of Raleigh Secondary and Cumulative Impacts Management Plan, Including the Communities of Garner, Knightdale, Rolesville, Wake Forest, Wendell, and Zebulon; Project #1454/Reference 08-0007

The City of Raleigh (Raleigh) has completed a series of utility merger agreements with the Towns of Wake Forest, Rolesville, Garner, Knightdale, Wendell and Zebulon. These merger agreements combine the water and wastewater utilities of each of the individual municipalities with the City of Raleigh's Public Utilities Department. Raleigh's SCI Management Plan (SCIMP) is intended to address infrastructure for each of those Towns as well as the City of Raleigh.

The NC Natural Heritage Program (NHP), in conjunction with the NC Wildlife Resources Commission (WRC) and several other agencies, compiled a list of recommendations, that when implemented by a local government, will simultaneously work to maintain or improve water quality, protect aquatic habitat, permit economic expansion, and preserve the character of the land. These recommendations are detailed in the WRC's *Guidance Memorandum to Address and Mitigate Secondary and Cumulative Impacts to Aquatic and Terrestrial Wildlife Resources and Water Quality* (August 2002) which is located on the web at: http://www.ncwildlife.org/pg07_WildlifeSpeciesCon/pg7c3_impacts.pdf. NHP directs Raleigh and all of the Towns included in the SCIMP to the information contained in the guidance memorandum, as the "Mitigation of Secondary and Cumulative Impacts" presented in Section 6 of the SCIMP does not address the majority of the resource agency recommendations. In order to "manage growth using innovative planning approaches and techniques" (p.6-1) as stated in the SCIMP, NHP urges each Town as well as the City of Raleigh to strengthen mitigation measures related to open space, riparian buffers, stormwater management, and floodplain protection.

For open space, NHP recommends leaving a minimum of 30% of the development area as greenspace, which would include buffers and wetlands and ensure that the greenspace is connected to natural resources. While we recognize that all of the open space indicated on

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Figure 5-1 cannot be mapped, it is striking how little green (i.e., open space) there is compared to the dark orange and brown (i.e., developed lands). NHP recommends that each member to the SCIMP improve their open space requirements, and follow in the footsteps of the Town of Rolesville that has a policy statement with a goal to achieve 30% open space conservation. To summarize, Raleigh requires 10-15% open space, Wake Forest ranges from 15-40%, Garner ranges from 5-35%, Knightdale does not have a percentage requirement, rather a square footage requirement based on numbers of bedrooms in a given development (and it is not clear what "stream bed areas" are for the inclusion in open space), Wendell does not have a percentage requirement, rather a 800 square feet per each dwelling unit requirement, and Zebulon requires 5% of development as usable open space. NHP strongly encourages a "green space task force" be developed to increase the amount of greenspace throughout Wake County, and to connect the open spaces for each of the seven members of the SCIMP. To increase greenspace, it appears that if more rigorous riparian buffer and floodplain protections are implemented (see comments below), it is likely that the 30% greenspace recommendation will be met.

Wide, contiguous riparian buffers can help maintain biological integrity and can ameliorate many detrimental ecological issues related to land use. NHP continues to recommend the maintenance or establishment of a minimum 100-foot native forested buffer along each side of perennial streams and 50-foot native forested buffer along each side of intermittent streams and wetlands throughout the SCIMP area. For Garner (Swift and Middle Creek watersheds) and Wake Forest, Rolesville, Wendell and Zebulon (Little River and Moccasin Creek watersheds), where federally endangered aquatic species exist, the minimum recommended buffer widths are a 200-foot native forested buffer on perennial streams and a 100-foot native forested buffer on intermittent streams, or the full extent of the 100-year floodplain. These buffers are critical for the survival of endangered and threatened aquatic species, the buffers will benefit water quality, and they can provide essential corridors for many species of wildlife.

While the Neuse Buffer Rules apply throughout the area, it is important to realize that those are water quality buffers, not buffers to protect rare aquatic species. To briefly summarize, Raleigh requires a range of 35-100 foot "relatively undisturbed" buffers, Wake Forest requires 25-100 foot "natural vegetated" buffers, Rolesville requires 100 foot "largely undisturbed" buffers, Garner requires 50-100 foot buffers, Zebulon requires 50-100 foot buffers, and Knightdale and Wendell require only the 50 foot Neuse Buffers. The Little River Interlocal Agreement (ILA) requires 100 foot undisturbed buffers in the Little River water supply watershed. It is apparent from these requirements that wider buffers are required in areas that are for water supply. In fact, in the places where the rare aquatic species live (i.e., below Lake Benson dam and within and below the proposed impounded section of the Little River), buffer requirements are minimal. In addition, on Page 1-5, the SCIMP states that "once the proposed dam site is determined, the local governments downstream of it may request a stream reclassification and expansion of their USAs." It appears from this statement that the local governments are looking to reduce the limitations required by the ILA, which would further threaten the rare aquatic species that inhabit the Little River. It is also important to note that the only known Neuse River basin population of the federally endangered Tar River spinymussel (*Elliptio steinstansana*) lives downstream of the proposed dam site on the Little River. Reducing protection will jeopardize the continued existence of this species.

While each of the seven participants in the SCIMP has a stormwater program, NHP contends that all of them could be more stringent with regards to impervious surface limits and triggers. The SCIMP states that "requiring impervious surface values of 10 percent in all watersheds encourages sprawl and creates other environmental problems" (p. 6-13). NHP questions what "other environmental problems" the applicant is referring to? Since correlation analyses of impervious surfaces to watershed classification based on water quality data have found that watersheds of unimpaired streams averaged 8% imperviousness, impacted streams averaged 11%, and degraded streams averaged 24% (p.8 of WRC guidance memo), and since preventing watersheds from becoming impaired is a goal not only for water quality, but also for aquatic species survival, the 10% goal is a minimum. Furthermore, nearly every municipality participating in this SCIMP does not implement stormwater BMPs until after 24% imperviousness is reached, and several programs allow up to 70% imperviousness. It is not clear why one would wait until streams become degraded before implementing stormwater BMPs. The protective recommendations as detailed in the WRC guidance memo are achievable, and many of the recommendations have been applied in Maryland to protect the Chesapeake Bay from water quality degradation. Please review http://www.mde.state.md.us/Programs/WaterPrograms/SedimentandStormwater (accessed 26 May 2008) for more information.

Only two of the municipalities (Wake Forest and Rolesville) appear to have adequate floodplain development restrictions. NHP continues to recommend that the local governments prohibit commercial or residential development within the 100-year floodplain. Undeveloped floodplains strongly influence aquatic systems, support a combination of riparian and upland vegetation used by aquatic and terrestrial wildlife, supply a rich source of food to aquatic communities, and provide an important sediment trapping function (p.8, WRC guidance memo). The filling of floodplains increases the potential for flooding of adjacent properties and interferes with the natural hydrologic process of the waterways. It also disrupts the continuity of migration corridors for wildlife. To summarize, Raleigh, Garner, Knightdale, Wendell and Zebulon allow development in the floodplain, while Wake Forest "effectively achieve[s] no development in the 500-year floodplain or future 100-year floodplain" (p.6-45), and Rolesville "effectively achieves no development or fill within the 100-year floodplain" (p.6-59). Ideally municipalities would set aside floodplains as greenspace, thus contributing to the overall 30% greenspace goal.

NHP is most concerned about impacts to the Little River watershed. The SCIMP recognizes that "the Little River is an important resource to protect because it is designated as a future water supply for eastern Wake County and it provides habitat for protected mussels" and "protecting the watershed is a priority among eastern Wake County municipalities" (p.6-17). While only a small portion of the Little River Reservior Water Supply Watershed is included in the study area for this SCIMP, NHP is very concerned about the intent of local governments downstream of the proposed Little River Reservoir dam site to seek "a stream reclassification and expansion of their USAs" (p.1-5). Not only will the proposed reservoir inundate rare aquatic species habitat, but reducing protections downstream of the reservoir will greatly impact rare aquatic species downstream, including the only known Neuse River basin population of the Tar River spinymussel. NHP strongly encourages strict regulations, particularly those detailed in the section labeled "Specific Mitigation Measures for Waters Containing Federally Listed Species" in the WRC guidance memo, for the entire Little River watershed.

The SCIMP claims that "the greatest water quality and quantity protection will be achieved by preserving stream buffers and installing stormwater control measures during and after development" (p.7-8). While it is clear that water supply issues are the highest priority for the municipalities involved with the SCIMP, it is also clear that rare aquatic species issues are not a priority. Each of the municipalities lacks protection for aquatic species habitat, specifically for goals for open space, buffer widths, impervious surface limits, and floodplain restrictions. NHP would like to see a much stronger commitment for the protection of aquatic species habitat by all the municipalities prior to signing off on the SCIMP.

Please let me know if I can provide more information. The North Carolina Natural Heritage Program looks forward to a collaborative effort to help protect the State's natural diversity. If I can be of assistance, please do not hesitate to call me at 919-715-1751.

CC via email: Shari Bryant, WRC
Dale Suiter, USFWS
Fred Tarver, DWR
Hannah Stallings, DWQ

Michael F. Easley, Governor

William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Coleen H. Sullins, Director
Division of Water Quality

May 22, 2008

MEMORANDUM

TO: Melba McGee, Environmental Projects Officer
DENR

THRU: Dianne Reid, Supervisor
Basinwide Planning Unit and SEPA Program

FROM: Hannah Stallings, SEPA Coordinator
Basinwide Planning Unit and SEPA Program

SUBJECT: Wake County
Raleigh SCI Management Plan
DENR#1454, DWQ#13968

The Division of Water Quality has reviewed the subject project and has the following comments and concerns:

1. Pages ES-2 and 1-3: Please clarify whether each of the seven communities involved will individually authorize the proposed Plan by signing the MOA.
2. Pages ES-2 and 1-3 state that the area covered in the Plan "includes each municipality's extra-territorial jurisdiction and urban service area."
   a. Since Middlesex receives its potable water from a connection to Zebulon's system, it needs to be included in the study area.
   b. A news story in January 2008 said that Zebulon is proposing to service portion of Johnston County (http://www.wral.com/news/local/story/2364964). If so, this needs to be included in the SCI Management Plan.
3. The discussion on infrastructure on ES-2 does not include roads. Please clarify if SCI resulting from transportation infrastructure is covered in this Plan.
4. Page 1-1: Please change the references to definitions for secondary and cumulative impacts to 15A NCAC 01C .0103(20) and 15A NCAC 01C .0103(a), respectively. Also, please change the quoted definitions accordingly.
5. Page 1-2 states "Inclusion of known infrastructure plans in one document provides a holistic review of growth projections for the City's service area, and infrastructure being designed to support that growth." Please clarify whether the Plan will only cover "known" infrastructure projects (it is assumed that the only known projects are those shown on the maps in Appendix C) or whether it will cover **all** water, wastewater, and transportation projects pursued by Raleigh and the merger communities. (Also, please address this issue as it relates to the 10-year planning horizon for this SCI Management Plan and the 4 year projections provided in Appendix C, as stated in comment 58.)
6. Please clarify whether this SCI Management Plan also covers transportation projects in the municipal boundaries that will be carried out by the State. If it will, it would seem that NCDOT should be a party to the MOA.
7. Page 1-5 states that the Falls Lake and Little River watersheds are outside of the USAs for the participating municipalities and are therefore not covered by the Plan. Since the municipalities derive benefit from the quality and quantity of water present in these watersheds, these areas should be brought within the jurisdiction

of the Plan. Without the cooperation of Wake County in the Plan, protection of this vital area cannot be assured. (Please address this issue throughout the document.)

a. Wake County should be made a partner to this SCI Management Plan since it will be called on to enforce regulations within partnering municipalities.
b. Page 1-5 states that "By limiting water and sewer infrastructure into these two watersheds, lower density development will occur in these watersheds which will help protect them." However, SCI will occur with or without the infrastructure projects (see second paragraph of section 5). Because of impacts from future development (whether or not it is served by a central water and/or sewer system), these two watershed areas should be covered by this Plan.
c. All watershed protection ordinances should be uniform across municipalities.

8. Responses to DWQ's scoping comments indicate that the report will organize the description of the existing environment in the Study Area by watersheds and discussion of impacts and mitigation by municipality (see page 2 of 10 in Appendix A). However, page 1-5 states that discussion of impact will be organized by watershed. Please clarify.
9. While Figure 2-1 shows the Wren Road WWTP, it is not mentioned in the text of section 2.1.1. Please clarify whether this WWTP is covered by the Plan.
10. Please discuss any small package plants within the Study Area that operate independently of the merged infrastructure system. (See comment 51 c.)
11. Please clarify that the Neuse River WWTP project received in FNSI in the fall of 2006.
12. Please provide the same level of detailed information on the other WWTPs within the Study Area as is provided on the Neuse River WWTP in section 2.1.1.
13. Page 2-1 states that "The City plans to expand and modify the Smith Creek WWTP."
    a. Please clarify what is meant by the City plans to "modify" the facility.
    b. The Plan states that this project will be completed by 2009. At what stage of the process is the project currently?
14. Page 2-1 states that the Smith Creek WWTP "is already permitted to discharge 6 mgd and the expansion will increase its constructed capacity to 3 mgd." Please clarify whether "constructed capacity" means the treatment/discharge capacity of the facility.
15. While page 2-2 states that the City plans to expand the Little Creek WWTP to 6 mgd by 2016, previous meetings on this project have discussed a planned discharge of 8 mgd for this facility. Please clarify.
16. Reclaimed Water: Please clarify how the recent and continuing concerns of the Raleigh City Council will impact the future of any reclaimed water projects in the Study Area. (Address this issue in Section 6.2.2.8, also.)
17. Section 2.1.3: When will Zebulon's expanded reuse water distribution system be operational?
18. Page 2-2 states that "new subdivisions [in Zebulon] that intend to use water for irrigation of community areas are required to install separate taps for reclaimed water." DWQ recommends that it be mandatory that **all** irrigation within new subdivisions be with reuse water and not potable water. (See comments 23 and 42.)
19. Section 2.3: DWQ recommends that the transportation portion of this Plan be removed since Raleigh will not provide a regional authority for the administration of these projects within the Study Area.
20. Figure 2-1: Please explain the rationale for choosing to diagram planned wastewater lines with a greater than 12-inch diameter.
21. Page 3-1 states that Raleigh's CIP considers "the long range objectives of the City." Please clarify how the objectives of each of the merger communities is figured into the CIP.
22. Please consider adding management of biosolids to the goals of wastewater projects listed in section 3.
23. Page 3-2 states that Raleigh will "Encourage the use of reclaimed water for approved purposes when economically and technically feasible." DWQ recommends that the City **require** the use of reclaimed water where feasible.
24. Page 3-2: Please clarify what is meant by "Offer other means to move people, goods, and information."

25. Page 3-3: Please modify the text in the third paragraph to reflect that data in Table 3-1 indicate that less than 783,000 will be served by the water and sewer systems by 2030.
26. Page 3-3 states "As demonstrated through its planning processes, the balance of growth and environmental protection is important to the City of Raleigh." Since the local ordinances of each individual merger community will be used within its limits to guard against SCI resulting from infrastructure projects, it would seem that the merger communities should also be included in this sentence.
27. There are several areas of Figure 4-2 that are known to be incorrect. For example, in the upper Moccasin Creek watershed, there is an overestimate of developed area. What impact does the incorrect information have on the projections being made?
28. Page 4-14: The last two sentences of section 4.4 state that, "While the NWI does not map all jurisdictional wetlands, it is useful in terms of classifying types of wetlands and their approximate locations within the Study Area. It is important to note that many changes have taken place within the Study Area since these data were compiled." Raleigh should not base the information for this Plan on faulty information. Please clarify.
29. Please update Tables 4-12 and 4-13 and Section 4.10.1.1 based on the *Draft 2008 303(d) List*, available at http://h2o.enr.state.nc.us/tmdl/documents/B.Draft2008303dList.pdf. Also, please update section 5.10.1.2 as necessary based on the draft 2008 list.
30. The first paragraph of Section 5 states that the Plan is results from an "Analysis of impacts [that] considers the proposed water and wastewater infrastructure planned for future land use conditions." Please clarify whether (1) reclaimed water is a separate category of infrastructure from wastewater and (2) SCI transportation projects are covered by the proposed Plan.
31. Page 5-17, Section 5.8: The third paragraph states that, "To address the impacts of growth on air quality, Wake County is researching and developing alternative modes of transportation, such as regional rail services within the Study Area." If Wake County is not an active partner in the agreement, then its actions should not count as mitigation.
32. Page 5-20, Section 5.12: In the first sentence of the third paragraph, please clarify whether reclaimed water lines are included in "sewer lines."
33. Page 6-1: The second sentence says that "The communities are working to address environmental concerns related to open space, water, wastewater, and stormwater." Please clarify whether transportation issues are addressed in this Plan and whether it is also supposed to cover stormwater impacts as a separate category.
34. Please consider adding the following to the list of Federal and State programs discussed in section 6.1: the 303(d) list; Protection of Wetlands, E.O, 11990; Isolated Wetland Protection; the Safe Drinking Water Act; the Clean Air Act; Floodplain Management, E.O. 11988; and the Farmland Protection Policy Act.
35. It would seem that each of the Watershed Plans in the Study Area would be consistent on impervious surface coverage area and buffer zones. Please explain why these measures are not uniform across municipal boundaries. Also, please consider making them consistent with one another. Please address this issue throughout the document.
36. Page 6-28 and elsewhere: Please clarify the inclusion of "plant and animal life" for needing clean and safe water.
37. Page 6-33, section 6.2.2.5.1
    a. Please clarify who the conservation inspector is for Flood Permits.
    b. Will the City's expansion of the area regulated under floodplain regulations change future land use plans presented in this Plan? If it will, then the City should not submit its final SCI Management Plan until it is finished.
38. Section 6.2.2.8, Water Conservation: There is concern about the following portions of the City's water conservation strategies.
    a. While the City has set 70% as its threshold for requiring conservation, the Environmental Assessment prepared for the updated Falls Lake Drought Contingency Plan calls for action by state, federal, and local agencies for such things as implementing conservation measures when the water quality storage volume of

the lake falls below 80%. It is recommended that the City continue working with the Corps of Engineers to formulate a drought response models that will work in unison with one another.

b. Please include information on how this section will be updated in light of impending legislation that may require mandatory uniform state-wide water conservation.

39. Page 6-40: DWQ recommends that the City provide its xeriscaping booklet on its website.
40. Page 6-42: Please clarify why reuse water can be used for "vehicle washing if the reuse water is either recaptured or is applied without a spray" but reuse water can be used for street cleaning, where it is sprayed from a moving vehicle and will enter the storm sewer system and not be recaptured.
41. Page 6-49, Section 6.2.3.5: Please include Knightdale's Open Space and Greenway Plan in Appendix K.
42. Page 6-55, Section 6.2.3.10: DWQ recommends that all municipalities affected by this Plan adopt Wake Forest's requirement that irrigation systems in new developments may not connect to the potable water system.
43. Page 6-59, Section 6.2.4.2: Please provide more detail on Rolesville's Community Plan and include it in Appendix K.
44. Page 6-65, Section 6.2.4.10
    a. Please clarify whether the 401 Bypass project will be built by the Town or the State. If this is a State project, please clarify what impact Rolesville can have on the installation of bikepaths and sidewalks. (See comment 6.)
    b. DWQ recommends that all municipalities adopt the objective to link themselves by public transportation alternatives.
45. Page 6-67, Section 6.2.5.2: Please include Garner's Comprehensive Growth Plan in Appendix K.
46. Page 6-69, Section 6.2.5.4: Please include Garner's Comprehensive Parks and Recreation, Open Space and Greenways Master Plan in Appendix K. Also, please provide more detail on this program so that one can tell how the bulleted needs are being addressed by the Town.
47. Page 6-72, Section 6.2.5.6.2: The second paragraph appears incomplete. Please amend as necessary.
48. Section 6.2.6.1: DWQ recommends that each municipality adopt a formal Municipal Water Allocation Policy.
49. Page 6-83, Section 6.2.7: Please include Wendell's Comprehensive Plan and Unified Development Ordinance (even if in draft form) in Appendix K.
50. Page 6-87, Section 6.2.7.4.1
    a. DWQ recommends that each municipality sign a resolution of support and commitment to mitigative measures to address SCI associated with infrastructure improvements.
    b. Please clarify whether the resolution the Town signed also supports SCI mitigation for impacts resulting from transportation projects. (Also address this in 6.2.7.4.2.)
    c. Please clarify what/whose standards will be used to "pursue ordinance modification" for stream buffers.
51. Page 6-87, Section 6.2.7.4.2
    a. DWQ does not recommend new development be allowed in a floodplain. DWQ recommends that each municipality adopt floodplain development ordinances like those of Wake Forest, outlined in Section 6.2.3.7.2.
    b. DWQ recommends that each municipality require that new and replacement water supply systems and wastewater collection systems be designed to minimize or eliminate infiltration of floodwaters.
    c. DWQ discourages on-site septic systems.
        i. Please clarify who in the Wendell service area relies on an on-site system.
        ii. Please clarify why any on-site systems within the service area have not been required to connect to the municipal wastewater system.
    d. While text in this section says that "The ILA requires the 100 foot riparian buffers be undisturbed in the floodplain of the Little River water supply watershed," text in 6.2.7.4.1 says that greenways and public parks are allowed in the buffer zone. Please clarify.
    e. When does Wendell expect to pass ordinance prohibiting development in the 100-year floodplain?

52. Page 6-89, Section 6.2.8
    a. Please include Zebulon's Comprehensive Plan in Appendix K.
    b. Please update the status of the Town's Plan. DWQ is not comfortable agreeing to Raleigh's SCI Management Plan if it requires Zebulon's Comprehensive Plan to be in effect.
53. Page 6-92, Section 6.2.8.3.2: DWQ recommends that all municipalities affected by the development of this SCI Management Plan adopt a similar Conservation Subdivision ordinance.
54. Section 6.2.8.4.2: DWQ recommends that Zebulon adopts a floodplain ordinance similar to that of Wake Forest.
55. Section 6.2.8.7: DWQ recommends that all municipalities affected by this SCI Management Plan provide water conservation educational materials on their websites.
56. Page 7-5, Section 7.6: DWQ recommends that all municipalities affected by this SCI Management Plan require that environmental resources be inventoried before permits are issued.
57. Section 7.10
    a. DWQ recommends that all of the merger communities limit nitrogen runoff from new development.
    b. DWQ recommends that the City's LID information be placed in a conspicuous place on its Planning Department webpage.
    c. Please clarify whether Zebulon's reuse program is separate from Raleigh's plan for this resource.
    d. Please clarify that using reclaimed water for non-potable purposes reduces water supply withdrawals in non-drought times, too.
58. Appendix C: Please clarify why these maps only project water and sewer project to the year 2012 when this SCI Management Plan will (presumably) cover impacts for 10 years. It is recommended that these maps be changed to reflect more long-term infrastructure plans.
59. Appendix K
    a. All merger agreements should be on the CD. Only Rolesville's could be found.
    b. As mentioned in previous comments, any and all local ordinances mentioned to curb SCI should be included on this CD.

Please contact me at 733-5083, ext. 555, if I can be of any additional help.
Thank you.

Cc: Danny Smith – RRO

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary
John Morris, Director

May 23, 2008

MEMORANDUM

TO: Melba McGee, Environmental Coordinator
Office of Legislative and Intergovernmental Affairs

FROM: John Sutherland
Water Projects Section Chief

Ted Tarnell for John Sutherland

SUBJECT: City of Raleigh Public Utilities Department and merger communities
Draft Secondary and Cumulative Impacts Management Plan (DENR Proj. No. 1454)

The Division of Water Resources (DWR) submits these comments following the review of the April, 2008, draft *City of Raleigh Secondary and Cumulative Impacts Management Plan (Including the Communities of Garner, Knightdale, Rolesville, Wake Forest, Wendell, and Zebulon)*. The final version will be a secondary and cumulative indirect impact (SCI) management plan ("plan") for the City of Raleigh Public Utilities Department's (CORPUD) service area, consisting of the combined existing and future sewer and water systems of Raleigh and the "merger members" (i.e., Garner, Rolesville, Knightdale, Wake Forest, Wendell, and Zebulon). CORPUD's intent is for the plan to accompany either an environmental assessment (EA) or environmental impact statement (EIS) and serve in addressing, in part, the SCI associated with growth and development in CORPUD's service area.

DWR Scoping Comments

The following comments are associated with DWR's scoping comments dated August 15, 2007, and CORPUD's responses.

- Comment: "According to CORPUD's scoping letter for expansion of the Little Creek wastewater treatment plant, a justification of the expansion is to service growth in the Town of Middlesex; however, in the scoping letter for the plan, Middlesex is not included in the designated study area in Figure 1. CORPUD should adjust the service area boundary to accurately reflect service connections."
  Response: "Zebulon does provide wastewater service to the Town of Middlesex in Nash County. However, Middlesex must develop the appropriate environmental documents for new infrastructure and will address all [SCI] in those documents."

  CORPUD's June 21, 2007, scoping letter states that "[t]he Little Creek wastewater treatment plant (WWTP) will be expanded…to serve the growing towns of Zebulon and Wendell in Wake

County and Middlesex in Nash County…." Clearly, CORPUD's justification for the WWTP expansion is partially based on growth in the Town of Middlesex and the expansion will support growth in Middlesex. Rules 15A NCAC 01C .0103 (3) and (20) define cumulative and secondary impacts, respectively, as (emphasis added):

"…environmental impacts resulting from incremental effects of an activity when added to other past, present, and reasonably foreseeable future activities **regardless of what entities undertake such other actions**."

and

"…indirect impacts caused by and resulting from a specific activity that occur later in time or **further removed in distance** than direct impacts…."

The only constraint on consideration is that impacts be "reasonably foreseeable," not whether the applicant has jurisdiction over the service area. Due to the nexus established between the WWTP and SCI resulting from WWTP-supported growth in Middlesex, DWR requests that the plan expand the study area to encompass SCI in Nash County, as well as other similar areas outside CORPUD's service area that are serviced by CORPUD infrastructure. DWR also requests that the plan discuss whose development ordinances have priority when an extraterritorial jurisdiction (ETJ) extends into an adjoining county, i.e. Durham, Franklin, Johnston counties. The plan should also discuss how an extension of service to an outlying community counts towards the long-term allowable growth limit on a merger member, i.e. Zebulon's service to Middlesex, Raleigh's service to Fuquay-Varina and Holly Springs.

- Comment: "SCI are not necessarily confined to a project's service area. SCI may extend downstream of service area and jurisdictional boundaries. CORPUD should discuss plans to address SCI that may occur outside of the project service area, including areas in Johnston and Nash counties. CORPUD should adjust the study area boundary in Figure 1 to accurately reflect potential SCI."
  Comment: "CORPUD should discuss why upstream parcels of Wake County are outside of the study area. Upstream uses may contribute to downstream cumulative impacts."
  Response: "Secondary impacts from CORPUD's infrastructure will be generally be [*sic*] limited to its service area. Cumulative direct impacts may result from adjacent development, and cumulative direct impacts will be addressed in individual environmental documents."

  CORPUD's response indicates recognition that not all SCI are limited to its service area. As such, DWR requests that the plan be expanded to consider upstream and downstream secondary and cumulative indirect impacts outside the service area.

General Comments

- Figures 4-1, 4-2 and 5-1: DWR requests that the maps include boundary lines for each municipal limit, ETJ and urban services area (USA) as delineated in Figure 1-1.
- Page 1-2, Section 1.0, paragraph 5: The title of the plan is misleading given the stated purpose of the plan "…to address the secondary and cumulative indirect impacts for planned infrastructure." Since only half of cumulative impacts are being considered in the plan, i.e. indirect, the title should be modified to accurately represent this narrow focus.

- Page 1-3, Section 1.0, paragraph 1: DWR requests that the draft memorandum of agreement be included with the draft plan prior to submittal to the State Clearinghouse.
- Page 1-3, Section 1.1, paragraph 2: The plan states that the "…EIS does not require a determination of whether impacts are significant." And, that "[n]o quantitative analysis was performed to determine the level of significance of the impacts." However, Rule 01 NCAC 25 .0603 (6)(a) through (c) require that the EIS include "direct effects and **significance**," "indirect effects and **significance**," and "cumulative effects and **significance**" (emphasis added).
- Page 1-5, Section 1.3, paragraph 2: The plan states that "[t]he areas within these two watersheds [Falls Lake and Little River approximately upstream of Highway 64] that fall outside the USAs are not included in the Project Study Area…." CORPUD and some merger partners have USAs that extend into both watersheds and include both residential and nonresidential development. CORPUD's E.M. Johnson Water Treatment Plant (WTP)--which is slated for expansion and it is assumed that this plan would be referenced to address the WTP expansion's SCI--also lies within the Falls Lake watershed. Also, the plan doesn't mention that Falls Lake is slated for inclusion in the 2008 303(d) list (see Table 4-13 and pages 38 and 39 of the Division of Water Quality's *North Carolina 303(d) List* Draft for Public Review January 10, 2008 <http://h2o.enr.state.nc.us/tmdl/documents/B.Draft2008303dList.pdf>). By excluding these watersheds, the plan ignores the secondary and cumulative indirect impacts of permitted development both in and outside of USAs; some development is allowed up to 30 percent imperviousness. By excluding the upper Little River watershed, the plan ignores the secondary and cumulative indirect impacts of the proposed dam. DWR requests that the Falls Lake watershed be included due its expected inclusion on the 303(d) list and the WTP's expansion, and that the upper Little River watershed be included due to the proposed construction of the dam on the Little River. The plan should also consider impacts to the upper Little River watershed associated with land use in Franklin County, upstream of the proposed reservoir.
- Page 2-3, Section 2-3 & page 6-27, Section 6.2.2.4, paragraph 1: CORPUD's lack of regulatory authority over transportation and development projects does not negate the consideration of a project's SCI as they relate to impacts associated with CORPUD projects.
- Page 4-37, Section 4.12, paragraph 2: The American eel is a catadromous species.
- Page 5-17, Section 5.10 & page 5-20, Section 5.12: These sections fail to address the secondary and cumulative indirect impacts of dams.
- Page 5-19, Section 5.10.1.2: This section should include Falls Lake and any other subject waters not provided but presently included in the draft 2008 303(d) list and expected to be included in the final list. Also, the section states that "…it will likely be difficult to attain a healthy aquatic community in them, even with no future development. Increases in runoff may further degrade these waterbodies." The plan should address "…possible conflicts between the proposed activities and the objectives of federal, state, and local plans, policies, and controls for the affected area." (01 NCAC 25 .0603(6)(f))
- Page 5-22, Section 5.13.1, paragraph 5: The biological opinion (BO) for the dwarf wedgemussel in Swift Creek below Lake Benson Dam, included in Appendix J, is referenced. However, the plan does not provide any accomplishments in achieving compliance with the BO. Of particular importance to DWR is the consultation and establishment of a gauging station on Swift Creek. Please provide in the plan the status of the gauge station and other milestones toward compliance with the BO.

Thank you for the opportunity to comment. If you have additional questions or comments, please contact Fred Tarver at 919/715-5442 or at fred.tarver@ncmail.net.

cc: Linwood Peele, Fred Tarver, DWR
Shari Bryant, WRC
Hannah Stallings, DWQ
Sarah McRae, NHP

North Carolina Wildlife Resources Commission

MEMORANDUM

TO: Melba McGee, Environmental Coordinator
Office of Legislative and Intergovernmental Affairs

FROM: Shari L. Bryant, Piedmont Region Coordinator
Habitat Conservation Program

DATE: 28 May 2008

SUBJECT: Draft Secondary and Cumulative Impact Management Plan for City of Raleigh, Wake County, DENR Project No. 1454.

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 et seq.), North Carolina Environmental Policy Act (G.S. 113A-1 through 113A-10; 1 NCAC 25), North Carolina General Statutes (G.S. 113-131 et seq.), and North Carolina Administrative Code 15A NCAC 101.0102.

The City of Raleigh merged its water and wastewater systems with the Towns of Garner, Rolesville, Knightdale, Wake Forest, Wendell, and Zebulon. The Secondary and Cumulative Impact (SCI) Management Plan includes a brief description of planned water and sewer infrastructure, the impacts of growth resulting from construction of this infrastructure, and measures to mitigate growth impacts. Growth will be regulated by ordinances within each municipality. Separate environmental documents that address the direct impacts of individual infrastructure projects would be prepared.

Neuse River, Crabtree Creek, Walnut Creek Swift Creek, Middle Creek, Marks Creek, Buffalo Creek, Little River, and Mocassin Creek flow through or drain portions of the service area. Within these watersheds there are records for the federal and state endangered dwarf wedgemussel (*Alasmidonta heterodon*) and Tar spinymussel (*Elliptio steinstansana*); the federal species of concern and state endangered Atlantic pigtoe (*Fusconaia masoni*), green floater (*Lasmigona subverdis*), and yellow lance (*Elliptio lanceolata*); the federal species of concern and state special concern Carolina madtom (*Noturus furiosus*); the federal species of concern and state significantly rare pinewoods shiner (*Lythrurus matutinus*) and Roanoke bass (*Ambloplites cavifrons*); the state threatened creeper (*Strophitus undulatus*), Eastern lampmussel (*Lampsilis radiata*), triangle floater (*Alasmidonta undulata*), Roanoke slabshell (*Elliptio roanokensis*), and least brook lamprey (*Lampetra aepyptera*); the state special concern North Carolina spiny crayfish (*Orconectes carolinensis*) and notched rainbow (*Villosa constricta*); and the state significantly rare Carolina ladle crayfish (*Cambarus davidi*).

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We appreciate the City's efforts in developing a SCI Management Plan that details measures for addressing secondary and cumulative impacts. The SCI Management Plan should result in a more proactive approach to mitigation for SCI. Also, it should make the environmental review process simpler because SCI issues will not need to be addressed for each environmental document.

In our scoping comments for the SCI Management Plan (Bryant, 15 August 2007), we offered several recommendations to reduce impacts to aquatic and terrestrial wildlife resources from secondary and cumulative impacts. These recommendations included measures related to riparian buffer, floodplain and open space protection; impervious surface limits and stormwater management; and sediment and erosion control. Each of the local municipalities has implemented measures related to riparian buffer, floodplain and open space protection, impervious surface limits and stormwater management, and sediment and erosion control. Although many of the local municipalities implement protective measures that exceed those stipulated by state and federal programs, we remain concerned that continued degradation in area streams may be expected without the implementation of more extensive measures, particularly in those watersheds that support federally listed species.

We offer the following observations, comments, and recommendations on the SCI Management Plan:

General Comments on the SCI Management Plan

1. Executive Summary (p. ES-2): The memorandum of agreement (MOA) will detail how the SCI Management Plan will be used, the time period during which it can be cited in environmental documents, and under what circumstances it must be updated. The MOA has not been drafted, but will be finalized prior to public review of the document. We feel the time period in which the SCI Management Plan is applicable and the circumstances under which it will be updated are important. Although we are not opposed to the SCI Management Plan being valid for several years, we feel periodic reports should be submitted to document any additions, deletions, or changes that may occur to infrastructure projects or protective measures (e.g., riparian buffers) detailed in the SCI Management Plan. In addition, there should be a provision that allows the SCI Management Plan to be re-evaluated and updated if significant changes in aquatic or terrestrial wildlife resources are observed. Significant changes may include, but are not limited to, the listing or change in listing (e.g., from threatened to endangered) of a species; significant declines (e.g., numbers or health) in known populations; or significant changes in habitat (e.g., water quality) that could be detrimental to aquatic or terrestrial wildlife resources.

2. Information in the document is presented in two formats – by watershed and by local municipality. While we encourage management of natural resources on a watershed basis, it is sometimes difficult to determine which measures apply to which watersheds particularly when a watershed crosses municipal boundaries. It would be helpful if there was a table within the document that listed each watershed (e.g, Crabtree Creek) and the municipality or municipalities that fall within each watershed.

3. Section 2.3 (p. 2-3) states: "The City of Raleigh does not have jurisdiction over transportation projects in Garner, Knightdale, Rolesville, Wake Forest, Wendell and Zebulon and cannot require mitigation strategies for transportation projects outside its jurisdiction. Future transportation was considered in each local government's land use plan which serves as the basis for this SCI document." While we recognize that Raleigh may not have jurisdiction over transportation projects, these projects could significantly affect the rate and degree of development within each local municipality.

4. Section 5 (p. 5-1) states: "Growth in the City of Raleigh and the merger communities has and will be

facilitated by transportation facilities including the NCDOT development of I-540 and the US 64 bypass…Direct and SCI of these roadway projects have been addressed by the NCDOT." If SCI for transportation projects has been addressed by NCDOT, then a summary of the findings and any mitigation measures implemented by the local municipalities to address SCI from these projects could be included as an appendix in the SCI Management Plan.

5. We found Figures 4-1, 4-2, and 5-1, the tables with generalized existing and future land uses, and the tables with a summary of existing local programs in Section 6 particularly helpful.

Watershed Protection in General

1. Riparian Buffers: The Neuse River Basin Buffer Rules apply to each local municipality. These rules provide for a 50 foot riparian buffer on perennial and intermittent streams. Some of the local municipalities have adopted riparian buffers up to 100-feet and some do not allow lots to be platted within the buffers. Generally, wider riparian buffers are applied to water supply watersheds or to developments with higher impervious surfaces (>24%). We are pleased to see that some of local municipalities (e.g., Knightdale) require environmental surveys that include identification of natural and historic resources on a site prior to the preparation of development plans.

   In the document (p. 6-29), Wenger (1999) was cited as stating that "… 30 feet of forested buffer is sufficient to shade a stream and moderate instream temperatures for smaller streams that do not support cold water fisheries. Wider buffers are needed for wildlife corridors." However, the Wenger paper actually states that 30 foot buffers are an absolute minimum width. Wenger further states that forested buffers (not grass) are vital to the health of stream biota.

   Wide, contiguous riparian buffers have greater and more flexible potential than other options to maintain biological integrity (Horner et al. 1999) and could ameliorate many ecological issues related to land use and environmental quality (Naiman et al. 1993). We feel that 30 or even 50 foot buffers are not adequate to protect aquatic resources. Wide buffers are necessary to provide adequate shade, moderate stream temperatures, maintain stable water flows and channel morphology, stabilize stream banks, provide adequate organic carbon and nutrients to support the aquatic food web, provide large woody debris, and to adequately facilitate the exchange of groundwater and surface water.

   We continue to recommend a minimum 100-foot native forested buffer along each side of perennial streams and a 50-foot native forested buffer along each side of intermittent streams and wetlands. In watersheds that support federally listed species, we recommend a minimum 200-foot native forested buffer along each side of perennial streams and a 100-foot native forested buffer along each side of intermittent streams. Also, streams should be delineated according to U. S. Army Corps of Engineers (USACOE) or N.C. Division of Water Quality (NCDWQ) methodology.

2. Floodplain Protection: Some of the local municipalities do not allow development or fill in the floodplain and do not allow lots to be platted in the floodplain. Others allow structures in the floodplain, but require structures to be elevated 2 to 3 feet above base flow elevation. City of Raleigh limits fill in floodway fringe to 50 percent and built-upon-area in the floodway fringe is limited to 50%.

   For some of the local municipalities, it was stated the Town's floodplain ordinance complies with FEMA regulations. FEMA regulations are designed to protect property owners from damage and to allow them to purchase insurance protection against losses from flooding, not for the protection of natural resources.

   We continue to recommend local governments prohibit development within the 100-year floodplain. Undeveloped floodplains strongly influence aquatic systems, support a combination of riparian and upland vegetation used by aquatic and terrestrial wildlife, supply a rich source of food to aquatic

communities (Junk et al. 1989), and provide an important sediment trapping function (Palik et al. 2000). The filling of floodplains increases the potential for flooding of adjacent properties and interferes with the natural hydrologic process of the waterways. It also disrupts the continuity of migration corridors for wildlife.

3. Open Space Protection: Each of the local municipalities has provisions for protecting open space. These range from approximately 5% to 40%. Some require open areas to be in large continuous blocks and allow floodplains, steep slopes and riparian areas to meet minimum open space requirements. Others require a percentage of the open space to be dedicated for active recreational purposes. We are pleased to see a goal of the Wake County Consolidated Open Space Plan is to eventually protect a minimum of 30% of the county's land area or 165,000 acres.

   Table 4-4 (p. 4-6) shows open space to be about 7% of the existing land use in the study area and Table 5-2 (p. 5-6) shows open space to be 8% of the future land use in the future. It is interesting that Crabtree Creek, one of the most urbanized watersheds has the greatest percentage (15-16%) of the watershed as existing and future open space; whereas, many of the other watersheds are 2% or less. Section 4.3 (p. 4-3) indicates the actual percentage of open space within the Study Area is greater than the amount indicated in the tables due to a number of factors including that many areas that are undeveloped open space are found within the other various land use designations. Since the "Open Space" category does not appear to be representative of all open spaces within the Study Area, we question whether it would be more appropriate to rename the category. Perhaps "Parks and Protected Lands", if this term is applicable to the type(s) of Open Space described in these tables.

   Section 4.3 (p. 4-3) indicates riparian buffer and floodplain open space are contained in other land use categories. Riparian buffers represent about 7% of the Study Area and FEMA regulated floodplains represent 9%. However, it is not clear whether the riparian buffers are included within the percentage of FEMA regulated floodplains. Therefore, do riparian areas and FEMA regulated floodplains represent 9% of the Study Area, or do riparian areas and FEMA regulated floodplains represent 16% of the area?

   Many of the ordinances require or allow active recreational areas such as ballfields, parks, and playgrounds to serve as part of the open space requirements. Typically, these areas are not used by wildlife. Section 5.3 (p. 5-15) indicates future open space will likely be more fragmented except along stream channels where riparian buffers and floodplains serve as habitat corridors." This further supports our recommendation for protecting wide riparian buffers and the 100-year floodplain as these may be the only natural areas remaining in the future and these would provide connectivity between any larger areas of natural open space that do remain.

4. Impervious Surface Limits and Stormwater Management: Impervious surface limits range from 6% to 70% and are generally lower (6-12%) in water supply watersheds. Neuse River Nutrient Sensitive Waters Stormwater Program and NPDES Phase II Stormwater Program apply; NPDES Phase I Stormwater Program also applies to City of Raleigh. Generally, NPDES Phase II requires structural BMPs to treat the pre- and post-development conditions for the 1-year, 24-hour storm and these BMP's must achieve 85% removal in total suspended solids. All of the local municipalities comply with these programs. Some local municipalities require additional peak flow reduction to pre-development conditions for the 1-year, 2-year, 5-year, 10-year, 25-year, and in some cases, the 100 year storm.

   We recommended that impervious surfaces are limited to less than 10% of the watershed and 6% for watersheds that support federally listed species. Section 6.2.1.2 (p. 6-13) states: "However, requiring impervious values of 10 percent in all watersheds encourages sprawl and creates other environmental problems." Multiple studies have shown that stream degradation occurs at approximately 10% coverage by impervious surfaces and the Wake County Watershed Management Plan Task Force

performed a correlation analysis of impervious surfaces to watershed classification based on water quality data, and they found that watersheds of unimpaired streams averaged 8% imperviousness, impacted streams averaged 11%, and degraded streams averaged 24% (http://projects.ch2m.com/WakeCounty/).

Tables 4-5A to 4-5J (p.4-7 to 4-13) describe the existing percent imperviousness for each watershed – Falls Lake, Neuse River, Crabtree Creek, Walnut Creek, Swift Creek, Middle Creek, Marks Creek, Buffalo Creek, Little River, and Moccasin Creek. Existing percent imperviousness ranges from 11% (Middle Creek) to 39% (Crabtree Creek). Based on this information, it appears that all of the watersheds already exceed 10%. Tables 5-3A to 5-3J (p. 5-7 to 5-13) describe future percent imperviousness for each watershed. These range from 17% (Middle Creek) to 51% (Walnut Creek).

To minimize impacts to stream hydrology and aquatic resources, we continue to recommend that if impervious surfaces cannot be limited to 10% (6% in watersheds that support federally listed species), then stormwater control measures should be implemented when imperviousness approaches 10% (6% in watersheds that support federally listed species) and should mimic the hydrograph consistent with an impervious coverage of less than 10% (6% in watersheds that support federally listed species).

5. Table 4-13 (p. 4-27, 4-28) shows a list of 303(d) listed waters by watershed. There are 303(d) listed streams in the Neuse River, Crabtree Creek, Walnut Creek, Swift Creek, Buffalo Creek and Moccasin Creek watersheds. In Section 5.10.1.2 (p 5-19), it indicates these listed streams suffer from water quality or aquatic habitat stresses primarily from stormwater and urban runoff. Existing impervious surface for each of the watersheds that list urban runoff/storm sewer as a potential source for impairment is Neuse River, 22%; Crabtree Creek, 39%; Walnut Creek, 38%, and Mocassin Creek, 19%. Also, stated in Section 5.10.1.2 (p 5-19) "Since most of these waterbodies are located in areas that are already urbanized, it will likely be difficult to attain a healthy aquatic community in them, even with no future development. Increases in runoff may further degrade these waterbodies." This appears to support the need for increased stormwater control measures. We are encouraged to see the City of Raleigh has an initiative to adopt higher stormwater standards that is under consideration by the City Council (Section 6.2.2.7, p. 6-36).

6. Section 4.10.2 (p. 4-36) states: "Approximately 6 to 19 percent of rainfall in Wake County recharges the groundwater system, with groundwater contributing 35-55 percent of stream base flow during normal precipitation years." Section 5.10.2 (p. 5-19) states: "A general increase in impervious surfaces may also impede groundwater recharge and groundwater's ability to maintain base flow during drought conditions." Reduced groundwater infiltration and stream base flow could be an additional impact to aquatic resources. Reduced base flow will lead to increased stress for aquatic life, particularly during low flow months. Also, it could result in higher concentration of pollutants for longer periods of time. However, protecting wider buffers and the 100-year floodplain would allow for greater infiltration of stormwater and increase groundwater recharge.

   Section 7.10.1 (p. 7-7) states: "The City of Raleigh has generated a presentation and informational material on low impact development (LID) for the public and developers. The implementation of LID by developers will help reduce environmental impacts from development." We are pleased to see that LID methodologies are being considered. These methodologies tend to manage stormwater on the site and facilitate infiltration. It is likely that using LID methodologies would minimize groundwater and stream base flow impacts.

Watershed Protection in Waters that Support Federally Listed Species

1. Section 4.13.1 (p. 4-40) indicates the dwarf wedgemussel has been found in Swift Creek, Little River and Buffalo Creek. It should be noted the species has been documented in Middle Creek and

Moccasin Creek in Johnston County. Although dwarf wedgemussel has not been documented in Middle Creek or Moccasin Creek within Wake County, development activities within the Study Area have the potential to impact dwarf wedgemussel and its habitat downstream. Also, Tar spinymussel, a state and federal endangered species, has been documented in White Oak Creek.

2. Section 5.3 (p. 5-14) states: "...the most rural portions of the Study Area will be along the eastern and northern portions of the Study Area. The watersheds associated with these areas are important to protect for drinking water supply (Falls Lake, Smith Creek, Swift Creek) and protection of sensitive aquatic species (Little River, Middle Creek, Moccasin Creek, Swift Creek). In these areas there is predominantly an increase in low density residential development from forest and agricultural land.... Land use plans have been specifically developed for each municipality with specific protective strategies for water supply watershed within the Study Area..." It should be noted that many of the water supply watershed areas do not correspond with the Significant Aquatic Endangered Species Habitat areas (e.g., Swift Creek downstream of Lake Benson dam, Little River downstream of the proposed Little River Reservoir dam, and Moccasin Creek). It does not appear that comparable protective strategies (e.g., wider buffers and lower impervious surface limits) are applied to any areas outside of water supply watershed areas. In most cases, these are the areas where the sensitive aquatic species are found.

3. Section 7.13 (p.7-11) states: "In the Little River watershed, many ordinances and agreements have been set in place as protective measures that will minimize the impact on rare mussel species from growth. The Little River watershed will be impacted less due to its WSW designation...The ILA for communities within the watershed will also help protect this resource." However, it should be noted the water supply watershed designation basically encompasses the area upstream of the proposed dam. Although there are records for rare mussels above the proposed dam, these mussel species require flowing water to survive. If the reservoir is constructed these mussels will be extirpated from the impounded waters. It does not appear the same protective measures (i.e., Interlocal Agreement or ILA) that are being implemented upstream of the proposed dam are proposed to be implemented downstream of the dam. Further, Section 1.3 (p. 1-5) states "...proposed Little River Reservoir dam; once the proposed dam is determined, the local governments downstream of it may request a stream reclassification and expansion of their USAs." It is likely any stream reclassification below the dam would result in a stream classification that would require less protective measures. Rare mussels also are found downstream of the proposed dam into Johnston County, but it does not appear the ILA extends below the proposed dam of the reservoir. While these additional measures are minimizing impacts to aquatic habitat and rare mussels, we believe this protection is limited. If the reservoir is constructed, these measures provide little, if any, protection to downstream populations; if the reservoir is not constructed, we suspect the local municipalities will seek reclassification and expansion of their USAs into the proposed reservoir area. Again, it is likely that any stream reclassification would require less protective measures.

4. Section 4.13.3 (p. 4-43): There are approximately 147 miles of Significant Aquatic Endangered Species Habitat (SAESH) within the Study Area. The majority of this habitat falls in the Little River, Moccasin Creek and Swift Creek watersheds; however, dwarf wedgemussel has been documented in Middle Creek and Buffalo Creek. In our scoping comments (Bryant, 15 August 2007), we expressed concerns about impacts to federally listed species and their habitat resulting from secondary and cumulative impacts. We offered several recommendations to minimize impacts. Although each of the local municipalities has protective measures in place, these do not appear to be comparable to those measures detailed in our scoping comments and NCWRC's *Guidance Memorandum to Address and Mitigate Secondary and Cumulative Impacts to Aquatic and Terrestrial Wildlife Resources and Water Quality* (August 2002).

   Section 6.2.7.4.1 (p. 6-87) indicates the Town of Wendell has signed a resolution of support and

commitment to mitigative measures to address secondary and cumulative impacts associated with water and sewer utility projects which includes an agreement to pursue ordinance modification for stream buffers adjacent to perennial stream surface waters. It is not clear what these ordinance modifications may be and how these will affect those watersheds that support federally endangered species within the Town's jurisdiction. Further, Section 6.2.7.2 (p. 6-85) indicates the Town of Wendell adopted a Comprehensive Plan that includes a recommendation to protect and preserve lands that are legally developable but which should be lightly developed or not developed based on environmental and urban service factors. Included are those that are within the NCWRC recommended 200 foot riparian buffer for streams in Buffalo Creek and Little River watersheds. While we are pleased to see this initiative; the time frame for accomplishing it is not clear.

Appendix H, City of Raleigh Sampling and Monitoring Program: The sampling and monitoring plans are a result of various programs and initiatives implemented since the late 1990s. During the environmental review of several projects (Dempsey E. Benton Water Treatment Plant, East Neuse Parallel Interceptor, and Neuse River Wastewater Treatment Plan), the sampling and monitoring program was expanded to include certain areas of concern not covered under the current program. New stations added include At Lake Benson Dam, Swift Creek in Wake County, Swift Creek in Johnston County, White Oak Creek, Buffalo Creek downstream of Wendell, Middle Creek and Marks Creek. The Sampling and Monitoring Program includes water chemistry, stream geomorphology, stream hydrology, benthic macroinvertebrate, fish community, and mussel surveys. In previous correspondence (Deaton, 8 August 2005, Cox, 14 September 2005, and Cox, 19 September 2005), we indicated we could concur with each of the proposed projects listed above (e.g., Dempsey E. Benton Water Treatment Plant) with the conservation measures proposed by each local municipality and an approved monitoring plan to demonstrate development is not negatively affecting water quality or quantity in Little River, Buffalo Creek, Middle Creek and Swift Creek and their tributaries within the project service area. Monitoring should be focused on changes to water quality parameters or the hydrograph. Pre-project stream habitat surveys should be performed to document current conditions and to establish a baseline for comparison and then periodically repeated. In the event that the proposed measures do not provide the desired protection, the local government will implement additional measures until equivalent (to the Guidance) protection is attained.

In summary, the SCI Management Plan describes the existing and future land use conditions of the Study Area and the existing protection measures (e.g., riparian buffers) for each local municipality. Although there is discussion within the SCI Management Plan regarding implementation of more protective measures, it is not clear whether these would be adopted or what conditions would require their implementation. This is where we feel the time period for which the SCI Management Plan is valid, periodic reports, and what triggers a re-evaluation of the protective measures within the document are extremely important. We continue to question whether the measures included in this document are sufficient to protect water quality and aquatic and terrestrial wildlife resources within the Study Area under existing conditions, let alone under build out conditions. Each of the watersheds will increase in percent imperviousness and several streams in the Study Area are 303(d) listed waters. With the increases in impervious surfaces described between existing and future land use, we are concerned that improvements water quality and aquatic habitat of listed streams are unlikely and additional streams in the Study Area may become impaired and added to the 303(d) list in the future.

We continue to be concerned about the secondary and cumulative impacts within the Study Area, particularly in those watersheds that support federally endangered species. Although we would prefer each of the local municipalities to adopt the "Specific Mitigation Measures for Waters Containing Federally Listed Species" outlined in our scoping comments (Bryant, 15 August 2007) and detailed in NCWRC's *Guidance Memorandum to Address and Mitigate Secondary and Cumulative Impacts to*

Aquatic and Terrestrial Wildlife Resources and Water Quality (August 2002; http://www.ncwildlife.org/pg07_WildlifeSpeciesCon/pg7c3_impacts.pdf), we will accept the Sampling and Monitoring Program with the following change: the addition of two sampling locations in Moccasin Creek – one in Wake County above US 64 and one in Johnston/Nash County downstream of Zebulon. Moccasin Creek has designated SAESH and the protective measures in the Town of Zebulon are not comparable to those detailed for watersheds that support federally endangered species.

We also encourage the each of the local municipalities to consider integrating additional measures to address issues of development and its impact on water quality and aquatic and terrestrial wildlife habitat in those watersheds that do not support federally endangered species. Adopting ordinances that protect wide forested riparian corridors and the 100-year floodplain and that adequately treat stormwater in development areas in and outside of water supply areas are essential to protection of water quality and aquatic habitat in developing landscapes. Again, these measures can be found in NCWRC's *Guidance Memorandum to Address and Mitigate Secondary and Cumulative Impacts to Aquatic and Terrestrial Wildlife Resources and Water Quality* (August 2002; http://www.ncwildlife.org/pg07_WildlifeSpeciesCon/pg7c3_impacts.pdf)

Thank you for the opportunity to comment on this SCI Management Plan. If we can be of further assistance, please contact our office at (336) 449-7625.

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Responses to September 2008 Agency Comments

Response to Comments Submitted by DENR Agencies on September 16, 2008

Comment: Some of the responses indicate "many communities do allow" and "Raleigh is currently working with Wendell and Zebulon". The SCI Plan cannot be approved with these types of statements.

Response: The more generic "many communities do allow" is usually included in responses regarding open space requirements. The open space requirements vary not only between communities, but within a given community depending on the type of development that is proposed. In order to more clearly present the activities of a given local government, the document has been restructured such that each community's programs are included in separate chapters.

We acknowledge that the ordinances within Wendell and Zebulon's jurisdictions may not be adequate to protect federally endangered aquatic species within the Little River watershed. The City is working with these two communities to revise their ordinances as part of the Environmental Assessment being completed for the Little Creek WWTP expansion. Wendell and Zebulon are still reviewing potential programs to protect these species and are meeting with US Fish and Wildlife Service and the DENR resource agencies. In order to enable the SCI Management Plan to move forward, the Memorandum of Agreement (MOA) between the City and DENR has been revised to specifically address the agency concerns in these two jurisdictions. The SCI Management Plan will be used to describe potential SCI and existing mitigation programs for utility infrastructure, but additional mitigation measures for SCI may be required by DENR to protect federally endangered species, and these will be negotiated on a project-by-project basis until mitigation is approved as part of NCEPA process. Once this approval has occurred, they will be incorporated into the SCI Plan.

Comment: The agency data, information, and reasoning differs from the proposed responses, sometimes significantly. It also appears that the best ordinances were used in their responses.

Response: Each local government is unique and each has selected different ordinances to meet their needs to protect the human and natural environments. The local governments are also at different states of existing development, hence their approaches to addressing some of these issues are different. In general, we tried to provide the range of approaches in our responses. In order to ease agency review, each local government's programs are now presented in its own section of the document.

Comment: It is acknowledged that the measures currently in place in Wendell and Zebulon may not protect federally endangered species. However, they indicate that revisions to ordinances will be included in an attachment to the MOA. It is difficult to accept the plan without the measures being identified.

Response: We understand that the agencies would find it difficult to accept the plan without knowing what types of ordinances would be included in it for Wendell and Zebulon. Thus, the MOA between the City and DENR has been revised to specifically address the agency concerns in these two jurisdictions. The SCI Management Plan will be used to describe potential SCI and existing mitigation programs for utility infrastructure. The MOA acknowledges that additional mitigation measures for SCI may be required by DENR to protect federally endangered species, and these will be

negotiated on a project-by-project basis until mitigation is approved as part of NCEPA process, at which point the measures will be incorporated into the SCI Plan. The SCI Plan itself has not been modified.

Comment: Each Town has different items it needs to work on to move the Plan forward. The organization of the SCI Plan makes it difficult to use. It would be more useful if the Plan was divided into local municipality chapters. This would allow the Department to respond to each town accordingly.

Response: The Plan has been reorganized as suggested. At a meeting on October 29, 2008, the agencies tentatively agreed that the ordinances were sufficient for each Town with the exception of Wendell and Zebulon.

Comment: Little River Reservoir watershed is not included in the plan other than where local government ETJ's extend into those watersheds. There should be more information on the Little River Reservoir including the Interlocal Agreement area. The SCI Plan was referenced in the Little River Reservoir scoping meeting several weeks ago as being covered by the SCI Plan.

Response: The USACE will require that an SCI analysis be included in the NEPA EIS for the Little River Reservoir and the SCI Plan will likely serve as the basis for a portion of the analysis required for this document. The SCI Plan can be used to describe the growth-related impacts of the proposed dam in the City of Raleigh and the merger communities and many ordinances/programs in place to protect the utility service areas. The direct impacts of the Little River Reservoir (acres of wetlands impacted; roads that are inundated and need to be relocated; etc) will be described in the NEPA EIS. Since the City of Raleigh does not plan on extending utility service into the Little River Reservoir area, the water supply watershed area has not been included in this SCI Plan.

Comment: The SCI Management Plan should include federal agencies. Currently, WRC, NHP, and DWR are holding meetings with US Fish & Wildlife Service. It is my understanding that Wendell and Zebulon have been in discussions with the USFWS regarding Little River Reservoir mitigation. The SCI Plan will not be complete until negotiations with these towns are well defined and finalized. If federal agencies do not approve the SCI Plan, Raleigh and the merger communities will still need to address their SCI impacts. Have the federal agencies been asked to review the SCI Plan and MOA? The department also recommends a meeting be held with state and federal agencies prior to the Plan revised or moving forward.

Response: The USFWS and USACE have been involved since the beginning of the project. Both agencies were provided a copy of the scoping document and a draft copy of the SCI Plan. Wendell and Zebulon have been in discussions with the USFWS and USACE about mitigation that may be required for the Little Creek WWTP expansion. A meeting was held with the state and federal agencies to discuss the SCI Plan on October 29, 2008. At that meeting it was determined that the SCI Plan could move forward, but the MOA would specifically address Wendell and Zebulon; until negotiations are completed, the SCI may only be used to discuss the impacts. Further mitigation would likely be required for these communities for infrastructure projects within their jurisdiction.

Comment: The SCI Plan presents measures that are currently in place and there is a discussion about implementing some future measures. However, there is no definitive commitment to improving the measures currently in place. Given the anticipated future

growth in the service area, it is questionable whether the current measures are sufficient to minimize impacts to aquatic resources as growth or development increase over the next 10 years (duration of the Plan before revision). Once this Plan is approved, it's our interpretation of the MOA, new mitigation or ordinances can be recommended only if the resource agencies document the current ordinances are not protective. But then, it might be too late to prevent degradation in a watershed. We are particularly concerned about those watersheds that support federally listed species.

Response: This area includes some of the most heavily regulated watersheds in the state. Regulations include the Neuse riparian buffer and stormwater requirements; the post-construction requirements of Phase 2 apply to all the local governments. The ordinances that the local governments have in place are sufficient to protect the majority of resources. A table that summarizes the ordinances and policies of the various local governments has been added to the document. The document has also been reorganized such that each local government's programs are described in its own chapter. These two changes guide the reader to evaluate the programs. Swift Creek contains aquatic endangered species habitat. The City worked with the state and federal agencies to develop a program which includes monitoring of the watershed to ensure the habitat is protected. If monitoring data indicate additional measures are needed, new ordinances/policies will be developed.

Little River also has aquatic habitat that supports a federally listed endangered species. The MOA has been modified to specifically address Wendell and Zebulon, the two local governments with jurisdiction in the watershed downstream of the proposed dam. Until the agencies approve mitigation as part of the Little Creek WWTP EA, the SCI document may only be used to document the SCI and not for mitigation. There are rare species in Buffalo Creek and Moccasin Creek as well; Wendell and Zebulon are also the local governments with jurisdiction in these watersheds. Comment: In the comment matrix, the consultant's response states for general water quality protection the zoned buffer as outlined in the Neuse rules, is adequate. However, we are concerned with protecting aquatic habitat and species diversity within the watershed as well as water quality. While protecting water quality is an important component, it's not the only component and we continue to question whether the 50-foot riparian buffers provided in many of the local municipalities are protective of aquatic habitat and species diversity. There seems to be a disconnect between what the resource agencies are asking for in terms of protection (e.g. water quality, aquatic habitat and species diversity) and what the local municipalities feel the ordinances or measures should protect (e.g. water quality).

Response: DWQ maintains that the 50-foot riparian buffers are adequate to protect aquatic habitat. The inner 30-foot forested zone provides stream shading and temperature moderation, leaf litter and other woody debris that impacts aquatic habitat. In addition, many of the local governments do not allow development in the floodplain; this effectively serves to protect a wider riparian corridor.

Comment: Another example is the consultant indicates that limiting impervious surface to six to ten percent would encourage sprawl and is not good watershed planning. Although our resource agencies recommend that impervious surfaces are limited to less that 10% of a watershed and less than 6% for watersheds that support federally listed aquatic species, we also include...or stormwater control measures be implemented in order to mimic a hydrograph consistent with 10% impervious surface (6% in watersheds with federally listed species). The consultant indicates that in water supply watersheds imperviousness is limited and give the example the communities with a WS-II classification maintain the requirements of 6% impervious surface limits are not protecting the federally listed species. The

consultant further indicated that all of the communities are required to be Phase II compliant for impervious surface thresholds and the implementation of stormwater BMPs. However, Phase II does not require BMPs until imperviousness of a development exceeds 24%. Therefore, most of the watershed with federally listed species does not require stormwater BMPs until at least 24% imperviousness. While we recognize the municipalities may not be able to limit impervious surface to 6% or 10% of the watershed, they can require stormwater BMPs when the imperviousness for a development exceeds 6% or 10% (rather than 24%)

Response: In responding to this comment, it is necessary to respond separately for watersheds with and without the presence of federally listed endangered species.

We agree that lower impervious thresholds for stormwater BMPs would help protect aquatic resources, but many of these studies on which the impervious thresholds were based were on watersheds without other controls such as riparian buffers and erosion and sediment control. In addition, the state rules require stormwater BMPs for most watersheds when imperviousness exceeds 24 percent; these rules were adopted by the Environmental Management Commission after stakeholder and agency input. Some of the local governments (Raleigh, Garner, and Knightdale) require stormwater BMPs at lower levels of imperviousness throughout their jurisdictions. BMPs at lower levels are also required in water supply watersheds. Other control factors such as floodplain protection ordinances and erosion and sediment control which exceed state requirements work with the stormwater programs to protect the streams.

Wendell and Zebulon may have inadequate programs in place to protect the federally endangered aquatic species in their jurisdictions. Additional measures are being negotiated as part of the Little Creek WWTP EA. The MOA has been modified to address this issue.

Comment: The mitigation measures described in the Plan will help minimize the SCI from transportation projects, the intent of the SCI plan was not to cover transportation infrastructure." Although the document may be an attempt to mitigate for utility projects, it still needs to address the SCI of other past, present and reasonably foreseeable projects, like transportation infrastructure. The mitigation measures provided in the document may reduce impacts of transportation infrastructures, the impacts of roads need to be discussed as well as an identification of the impacted watershed.

Response: The SCI Plan does address past, present, and future transportation projects by basing the plan on existing land use and the future land use plan which accounts for future transportation projects. In addition, planned transportation projects are included in Appendix D. However, the SCI Plan will not be used to address the SCI of future transportation infrastructure projects. The title page, Plan, and MOA have been modified to clarify that the Plan is to be used for City of Raleigh Public Utilities infrastructure projects only.

Comment: Middlesex and a small portion of Johnston County do receive water (wastewater service?) from the City of Raleigh. However, the city is not responsible for any infrastructure outside Wake County and only provided the water to the county boundary." Raleigh may not be responsible for another entity's infrastructure for which it does not have a contract that establishes this responsibility, the city is still obligated to consider the impacts of interconnections that are growth-inducing. (This comment also made by DWQ).

Response: The City of Raleigh has contract agreements to provide bulk water and/or sewer services to the Town of Middlesex, Johnston County, Franklin County, Fuquay-Varina, and Holly Springs. Under these contracts, the City of Raleigh does not own, operate or maintain the infrastructure within the jurisdiction of these users but agrees to provide services to a connection point. A sample agreement for the Town of Middlesex has been included in Appendix C of the document. The City of Raleigh also has agreements with the Town of Cary, Johnston County and Franklin County for redundancy in case of emergency. If the City extended water or sewer service outside the County, the area that would receive service would need to meet the ordinances and policies required by the merger community that would provide service through its agreement with Raleigh. Since this is not the case, the study area has not been modified.

Comment: If the CIP is planned over 4 years and the Plan is updated every ten years, it seems as though the plan is not current at the end of the CIP planning cycle. Perhaps different suites of mitigation measures should be adopted for the spectrum of less impacted to more impacted streams.

Response: The CIP covers a ten-year time frame and is updated annually. The maps that are developed as part of the CIP planning process include the projects that are planned for funding over the next five years. This has been clarified in the Plan.

Comment: It's the department's understand that the Comprehensive Plan for Raleigh is being updated. What types of changes are being made?

Response: Currently, the City of Raleigh is undergoing a 24-month process to update its Comprehensive Plan that kicked off in August 2007. The updated Plan will provide a substantially revised policy framework for a wide range of decisions concerning land use, development, design, and public investment priorities. An extensive public input and outreach effort is underway that will serve, in combination with technical studies, as the foundation for the Plan's policies. Further information on the Comprehensive Plan has been provided in the draft SCI Plan.

Comment: "The local governments do derive benefit from Falls Lake and the Little River. However, they have no jurisdiction over these watersheds, except for the portion within the study area. Thus the watershed areas outside the Plan Study area will not be included in the SCI Plan." These two watersheds, at least at the full-pond elevation, need to be included to account for SCI associated with water quality and pool elevation manipulation. Also, zoning ordinances and Rolesville's interest in extending water lines into the Little River watershed have not been resolved. Also, the city is allowed to extend utility lines into Falls Lake watershed for emergency situations. These actions still have impacts. (DWQ also commented that it strongly recommends that the Falls Lake and Little River watersheds be brought under Raleigh's SCI management Plan).

Response: The City does not plan to extend utility service into these watersheds. The City may extend utility service into the watershed areas for emergency situations; these are rare and are completed when public health is at risk. If this occurs, it would serve only existing development. The City plans to expand the E.M. Johnson WTP up to a reliable capacity of 100 mgd. This expansion of the E.M. Johnson WTP will enable the City to fully use its allocated water supply from Falls Lake, 45,000 acre-feet that was reviewed in a NEPA EIS completed in 1974 and updated in 1994. SCI for the Little River Reservoir will be evaluated under the NEPA EIS for that project, but this SCI Plan will likely serve as a starting point for the SCI analysis necessary for that NEPA document.

Comment: The ordinances should be as nearly uniform as possible. Why should T&E species in one stream be entitled to more protection than those in another stream simply because they are location in different ETJs?

Response: Each Town is unique, and protects its environmental resources in a manner which serves their needs. For example, some Towns have elected to protect floodplains through floodplain development ordinances which prohibit development within the floodplain. Others have zoned Conservation Districts along their floodplains while others have enacted Conservation Subdivision ordinances which require protection of the floodplain in these types of developments.

The comment appears to address the differences between protection strategies in the Swift Creek and Little River watersheds. The City of Raleigh worked with the agencies to develop an adaptive management approach strategy for the Swift Creek watershed in which they are performing monitoring to ensure protection strategies are working. We acknowledge that strategies currently in place in the Little River watershed may not be protective. The MOA has been modified to specifically address this. It should also be acknowledged that the US Congress has not authorized USFWS and other federal agencies to develop local land use and development ordinances; these issues remain the purview of local governments.

Comment: Figures 4-1, 4-2, and 5-1: DWR requests that the maps include boundary lines for each municipal limit, ETJ and urban services area (USA) as delineated in Figure 1-1. The maps should be updated to illustrate interconnections outside the county or planning area to better understand growth-inducing SCI outside both.

Response: Adding the municipal boundaries, ETJs and USA made the maps largely illegible so the maps have not been modified. The local government boundaries and watershed areas are shown on a map in Section 1.

Agency Comments - September 2008

NCDENR

North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary

Post-it® Fax Note 7671	Date 9/16/08	# of pages ▶ 5
To RUTH SWANEK	From MELBA MCGEE	
Co./Dept.	Co.	
Phone #	Phone # 715-4194	
Fax # 875-8491	Fax #	

MEMORANDUM

TO: Ruth Swanek
CH2MHill

FROM: Melba McGee
Department of Environment and Natural Resources

DATE: September 16, 2008

RE: Raleigh SCI Management Plan, Matrix and MOA

The department finds the SCI Management Plan and response matrix insufficient. At this point, the department withholds specific comments on the draft MOA. The following bullets identify the department's concerns with the SCI Plan and matrix.

- In the response column of the matrix it notes "many communities do allow" and "Raleigh is currently working with Wendell and Zebulon". The SCI Plan cannot be approved with these types of statements.
- In the comment matrix agencies presented their data, information and need for the recommendations; in the matrix, they presented their data, information and reasons why they proposed what they have. The two are not the same and in some cases not even close. Also, it appears they have given examples of the "best of the best" regarding ordinances that have been proposed or protective measures that are in place. There may be many measures for some of the local municipalities that fall very short of what we would consider protective.
- Although the consultants acknowledge that it is likely the measures currently in place in Zebulon and Wendell are not protective of federally-listed species, they also indicate if available, any ordinance amendment language and the timeline for the adoption of the amendments will be outlined in an attachment in the MOA. It is difficult to accept the Plan without these measures being identified that would be protective of the federally-listed species within their jurisdictions. We feel more detailed information regarding protection measures for federally listed species should be included in the Plan, not as an attachment to the MOA.
- Each town has different items it needs to work on in order for the plan to move forward. The organization of the SCI Plan makes it difficult to use. It would be more useful if the organization was divided into local municipality chapters as if they were complete, separate documents. This would allow the department to respond to each town accordingly. Measures/ordinances should be specific for

floodplain, riparian buffer and open space protection, impervious surface limits and stormwater management and sedimentation and erosion control for each.

- Little River Reservoir watershed is not included in the plan other than where local government ETJs extend into those watersheds. There should be more information on the Little River Reservoir including the Interlocal Agreement area. The SCI Plan was referenced in the Little River Reservoir scoping meeting several weeks ago as being covered by the SCI Plan.
- The SCI Management Plan review should include federal agencies. Currently, the Wildlife Resources Commission, Natural Heritage and Division of Water Resources are holding meetings with the US Fish and Wildlife Service. It is my understanding that Wendell and Zebulon have been in discussions with the US Fish and Wildlife Service regarding Little River Reservoir mitigation. The SCI Plan will not be complete until the negotiations with these towns are well defined and finalized. If federal agencies do not approve the SCI Plan Raleigh and the merger communities will still need to address their secondary and cumulative impacts. Have the federal agencies been asked to review and provide comments on the SCI Plan and MOA? The department also recommends that a meeting be held with state and federal agencies prior to the Plan revised or moving forward.
- The SCI Plan presents measures that are currently in place and there is discussion about implementing some future measures. However, there is no definitive commitment to improving the measures currently in place. Given the anticipated future growth in the service area, it is questionable whether the current measures are sufficient to minimize impacts to aquatic resources as growth or development increases over the next 10 years (duration of the Plan before revision). Once this Plan is approved, it's our interpretation of the MOA, new mitigation or ordinances can be recommended only if the resource agencies document the current ordinances are not protective. By then, it might be too late to prevent degradation in a watershed. We are particularly concerned about those watersheds that support federally listed species.
- In the comment matrix, the consultant's response states for general water quality protection the zoned buffer as outlined in the Neuse rules, is adequate. However, we are concerned with protecting aquatic habitat and species diversity within the watershed as well as water quality. While protecting water quality is an important component, it's not the only component and we continue to question whether the 50-foot riparian buffers provided in many of the local municipalities are protective of aquatic habitat and species diversity. There seems to be a disconnect between what the resource agencies are asking for in terms of protection(e.g. water quality, aquatic habitat and species diversity) and what the local municipalities feel the ordinances or measures should protect (e.g., water quality).
- Another example is the consultant indicates that limiting impervious surface to six or ten percent would encourage sprawl and is not good watershed planning. Although our resource agencies recommend that impervious surfaces are limited to less than 10% of a watershed and less than 6% for watersheds that support federally listed aquatic species, we also include…or stormwater control measures be implemented in order to mimic a hydrograph consistent with 10% impervious

surface (6% in watersheds with federally listed species). The consultant indicates that in water supply watersheds imperviousness is limited and give the example the communities with a WS-II classification maintain the requirements of 6 % impervious surface in the critical area and 12 % in the remainder of the watershed. As noted in agency comments, most of the federally listed species do not occur within designated water supply watersheds; therefore, these lower impervious surface limits are not protecting the federally listed species. The consultants further indicate that all of the communities are required to be Phase II compliant for impervious surface thresholds and the implementation of stormwater BMPs. However, Phase II does not require BMPs until imperviousness of a development exceeds 24%. Therefore, most of the watershed with federally listed species does not require stormwater BMPs until at least 24% imperviousness. While we recognize the municipalities may not be able to limit impervious surface to 6% or 10% of the watershed, they can require stormwater BMPs when the imperviousness for a development exceeds 6% or 10% (rather than 24%).

- The mitigation measures described in the Plan will help minimize the SCI from transportation projects, the intent of the SCI Plan was not to cover transportation infrastructure." Although the document may be an attempt to mitigate for utility projects, it still needs to address the SCI of other past, present and reasonably foreseeable projects, like transportation infrastructure. The mitigation measures provided in the document may reduce impacts of transportation infrastructures, the impacts of roads need to be discussed as well as an identification of the impacted watersheds.
- "Middlesex and a small portion of Johnston County do receive water (wastewater service?) from the City of Raleigh. However, the city is not responsible for any infrastructure outside Wake County and only provided the water to the county boundary." Raleigh may not be responsible for another entity's infrastructure for which it does not have a contract that establishes this responsibility, the city is still obligated to consider the impacts of interconnections that are growth-inducing.
- If the CIP is planned over 4 years and the Plan is updated every ten years, it seems as though the plan is not current at the end of the CIP planning cycle. Perhaps different suites of mitigation measures should be adopted for the spectrum of less impacted to more impacted streams.
- It's the department's understanding that the Comprehensive Plan for Raleigh is being updated. What types of changes are being made?
- "The local governments do derive benefit from Falls Lake and the Little River. However, they have no jurisdiction over these watersheds, except for the portion within the study area. Thus, the watershed areas outside the Plan study area will not be included in the SCI Plan." These two watersheds, at least at the full-pond elevation, need to be included to account for SCI associated with water quality and pool elevation manipulation. Also, zoning ordinances and Rolesville's interest in extending water lines into the Little River watershed have not been resolved. Also, the city is allowed to extend utility lines into the Falls Lake watershed for emergency situations. These actions still have impacts.

- The ordinances should be as nearly uniform as possible. Why should T&E species in one stream be entitled to more protection than those in another stream simply because they are located in different ETJs?
- Figures 4-1, 4-2 and 5-1: DWR requests that the maps include boundary lines for each municipal limit, ETJ and urban services area (USA) as delineated in Figure 1-1. The maps should be updated to illustrate interconnections outside the county or planning area to better understand growth-inducing SCI outside both.

Comments from the Division of Water Quality are being provided as an attachment. Please let me know if you have questions.

Attachment

Michael F. Easley, Governor

William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Coleen H. Sullins, Director
Division of Water Quality

August 29, 2008

MEMORANDUM

TO: Melba McGee, Environmental Projects Officer
DENR

THRU: Dianne Reid, Supervisor
Basinwide Planning Unit and SEPA Program

FROM: Hannah Stallings, SEPA Coordinator
Basinwide Planning Unit and SEPA Program

SUBJECT: Wake County
Raleigh SCI Management Plan
DENR#1454, DWQ#13968

The Division of Water Quality (DWQ) has reviewed the project response matrix provided by the City of Raleigh to our previous comments provided for the SCI Mitigation Plan. DWQ appreciates Raleigh considering our suggestions for ordinances and actions that can better protect the environmental impacts of growth within the city and its merger communities. However, all of the Division's concerns were not addressed by the City in this matrix. Our remaining comments and concerns are as follows:

1. **Middlesex**
   It appears from the Intermunicipal Agreement between Middlesex and Raleigh that Raleigh does have significant responsibility for services and infrastructure in Middlesex. Therefore, Middlesex must be addressed in Raleigh's *SCI Management Plan.*
   DWQ would be glad to meet with Raleigh to clarify our position.

   Johnston County
   Provision of utility service within Johnston County will have the same affects as the provision of these services within Middlesex as discussed above. Therefore, those portions of Johnston County that receive utility service from Raleigh should be brought within the City's *SCI Management Plan.*

2. While responses acknowledge that the affected municipalities derive benefit from Falls Lake and the Little River watersheds, it states that these areas will not be brought within Raleigh's *SCI Management Plan*. Without including these vital areas in the *Plan*, protection of water quality in this area from the effects of future urbanization cannot be assured. Therefore, DWQ strongly recommends that the Falls Lake and Little River watersheds be brought under Raleigh's *SCI Management Plan.*

Please contact me at 807-6434 if I can be of any additional help.
Thank you.

Cc: Danny Smith – RRO

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USFWS Comments and Response on Preliminary Draft Document

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

October 27, 2008

Francine Durso, PE
Senior Project Manager
CH2M Hill
Tower Two
3201 Beechleaf Court, Suite 300
Raleigh, North Carolina 27604

Dear Ms. Durso:

Thank you for your invitation to review, and patience in awaiting comments on, the 2008 *Draft Secondary and Cumulative Impacts Management Plan for City of Raleigh and Towns of Wake Forest, Rolesvillle, Garner, Knightdale, Wendell, and Zebulon.* The draft plan addresses the future infrastructure needs of each municipality, including extraterritorial jurisdictions and urban service areas (a study area of about 428 square miles in 10 upper Neuse River basin watersheds). The draft is intended as the foundation for an MOA that would negate the need for addressing secondary and cumulative impacts on a project by project basis in favor of this more efficient analysis of anticipated impacts and mitigative measures; direct effects would still be addressed on a project-specific basis. While the U.S. Fish and Wildlife Service (Service) does not have special expertise in the requisites for State Environmental Policy Act (SEPA) reviews, we are keenly interested in management of rare freshwater mussels and anadromous fish in the study area. We periodically review SEPA documents addressing impacts to those resources, and our comments are offered from the perspective of how the draft plan affects their consideration and conservation. The Service sees promise in this approach as a step toward more comprehensive assessment and better mitigation of secondary and cumulative impacts. We believe more specific environmental goals, critique of conservation programs, and application of an adaptive management framework would improve the draft plan as discussed below.

We appreciate the work that CH2M Hill and Raleigh have put into this effort. The draft plan is a valuable compilation of the growth projections, planned infrastructure, and existing conservation mechanisms for eastern Wake County municipalities. We have already used the draft plan as a reference, and upon revision to address agency comments, it will help address the first two limitations of existing processes listed on page 1-2 (it will provide a more holistic view of the impact area, and reduce redundancy in SEPA documents for the project area).

We are not yet comfortable that the existing level of detail meets the third and fourth objectives listed on page 1-2 – consolidating agency review, and streamlining coordination with municipal governing and planning boards. As such, the draft plan may not be able to substitute for evaluating secondary and cumulative impacts on a project by project basis, as written. We believe a focused effort could make the draft plan achieve all of its objectives (all of which we agree would be valuable).

In its current configuration, the draft plan is more of a listing of programs to address secondary and cumulative impacts than either an analysis of those programs' efficacy or an optimization of them to increase their efficiency and effectiveness in achieving a desired environmental outcome. With 14 natural resource categories (e.g., wetlands, fishery resources, etc.) to address in SEPA secondary and cumulative impact review, we realize the challenge to critique and optimize the many programs aimed at their conservation. However, some critical evaluation of the programs is needed if this document is going to supplant project-specific review.

In our view, the comprehensive overview of programs (which is impressive) without a critical evaluation of their efficacy may be an inevitable outcome until the draft plan incorporates clear and specific environmental goals against which to evaluate the performance of the suite of conservation actions (and, if necessary, modify them to help achieve the stated conservation goals). Please consider this example for the rare aquatic species. At present, the draft plan lists the rare species and describes their identification, range, and protection status. The draft plan notes the need for conservation of these species and identifies development pressures likely to affect them. The draft plan then lists the measures in place to address the anticipated impacts. What is lacking at present is an assessment of whether the mix of programs will effectively conserve these rare species (and if not, how they should be modified to help ensure conservation). It reads as a list of good things being done by federal, State, local and private entities but lacks an analysis of whether that mix will be good enough for a specific rare species conservation outcome. Consider these suggestions as an example of how the document could address rare species, such as the federally-endangered dwarf wedgemussel (*Alasmidonta heterodon*) and Tar spinymussel (*Elliptio steinstansana*) (as one example among the 14 environmental attributes to be evaluated in SEPA reviews) –

1) Include specific goals(s) in Section 3 such as "Ensure the long-term survival of the rare and endemic aquatic fauna of the project area, including the two federally-listed endangered mussels." This and other environmental goals could be added in Section 3, right after the four specific lists of wastewater project goals, water reclamation goals, potable water project goals, and transportation project goals (19 specific infrastructure goals in all) (page 3-1 and 3-2). From our perspective, specific environmental goals need to be added; they set the stage for an adaptive management approach to achieving them.

2) Add an explicit evaluation of how well the mix of conservation programs (such as stormwater management, development density planning, and floodplain management) is expected to achieve that goal. If necessary, identify how the mix of programs could be improved to make achieving the goal more likely. For example, with disparate floodplain management approaches among the municipalities, would not some be considered "better" at achieving a stream conservation goal than others? In addition to evaluating current conservation programs, it would also be appropriate to list the initiatives or efficiencies that could be realized from the holistic view being taken in the draft plan. For example, the Little River is critically important to conservation of rare mussels, fish and amphibians. The draft plan lists mechanisms for its conservation. The Little River is also mentioned in the Wake County Open Space Plan (Revised September 2006), which is referenced in the draft plan (page 6-85 and 6-86) as a foundation for Little River Corridor Park, an open space park along the Little River that Wendell, Zebulon and Wake County would like to see happen as part of their green space / open space vision.

Because the Little River is likely to be affected by secondary and cumulative impacts from water and wastewater infrastructure, special attention ought to be given to the particular conservation programs that would both benefit rare species conservation and help realize the green space goals of the affected municipalities. Promoting and coordinating the subset of measures that help meet multiple goals is a high priority in a holistic approach and an expansion upon recognition of the opportunities, as is presented now at pages 7-2, 7-5, and 7-11 of the draft plan.

3) Identify the monitoring components and management triggers that would allow periodic objective assessments of whether the goal is being achieved. For example, this section would emphasize the impressive water quality and biological monitoring program supported by the City of Raleigh and others. For the rare species conservation example however, there may be the need for directed assessments of the particular rare species and their habitats (and specific conservation targets for them) as an integral component to helping meet the goal of rare species conservation in the upper Neuse basins of Swift Creek, Little River and Middle River (for example, there is not much monitoring in the lower Little River at present, according to Figure 4-4).

4) Identify the adaptive management mechanisms whereby the mix of conservation programs could be revisited if the rare species conservation goal is not being met (or potentially relaxed if the goal is being exceeded). In the specific example of rare species conservation, if they continue to decline despite the efforts outlined in the draft plan, then a previously defined mechanism for tweaking the management approach should be triggered.

The City of Raleigh and each municipality has proactively approached infrastructure development and environmental conservation, and they have assembled a talented group of environmental consultants to assist with those efforts. While we are confident that team is quite capable of re-focusing the draft plan to articulate specific environmental goals (as specific as the infrastructure goals already listed), evaluate secondary and cumulative impacts on a goal-specific basis, and design an adaptive approach that ensures progress toward those goals, we would be pleased to assist on the rare aquatic species and migratory fish components upon request.

The Service appreciates the opportunity to comment on this draft plan. Please continue to advise us or seek any needed additional technical assistance from us during the planning process. If you have any questions regarding our response, please contact our office at 856-4520.

Sincerely,

Pete Benjamin
Field Supervisor

CH2M HILL
Tower Two
3201 Beechleaf Court
Suite 300
Raleigh, NC 27604
Tel 919.875.4311
Fax 919.875.8491

CH2MHILL

December 12, 2008

Mr. Pete Benjamin
Field Supervisor
US Fish and Wildlife Service
P.O. Box 33726
Raleigh, NC 27636-3726

Subject: City of Raleigh Secondary and Cumulative Impacts Management Plan: Including the Communities of Garner, Knightdale, Rolesville, Wake Forest, Wendell, and Zebulon

Dear Mr. Benjamin:

Thank you for your comments on the Draft *City of Raleigh Secondary and Cumulative Impacts Management Plan: Including the Communities of Garner, Knightdale, Rolesville, Wake Forest, Wendell, and Zebulon* and for having Tom Augspurger attend the October 29, 2008 meeting with agencies regarding the subject SCI Management Plan. We appreciate the agency's input on this document.

We acknowledge that the draft Plan falls short of adequately addressing your concerns related to federally-listed endangered species. However, since the meeting on October 29, 2008, we are taking steps to move the process forward while allowing your concerns to be addressed as noted below.

Your letter indicates that that the document seems to fall short on improving the efficiency of agency review of North Carolina Environmental Policy Act (NCEPA) documents and on streamlining governing board action. We believe that the document does streamline agency review for the majority of public infrastructure projects by concisely presenting a large amount of information in a consistent manner. Many of these projects serve portions of the service area where there is not an issue with federally-listed species or that approaches to protecting those species have been previously agreed upon (e.g. Swift Creek watershed). However, agency review may be less streamlined for large projects such as the proposed Little River Reservoir or for projects that may impact federally protected species. The memorandum of agreement (MOA) between the City of Raleigh and NC Department of Environment and Natural Resources (NCDENR) that guides the use of this Plan now acknowledges these potential limitations of the Plan.

Governing board action may also be streamlined by comprehensively addressing agency concerns. For example, the responses to agencies acknowledge that the programs in place in Wendell and Zebulon may be insufficient to protect the aquatic endangered species within the Little River watershed. Wendell and Zebulon are working with the City of Raleigh and the agencies to develop programs which will protect the resources in the Little River. The MOA has been modified to specifically address the Little River watershed. The MOA now states that the SCI Management Plan will be used to describe potential SCI for infrastructure projects within these two communities and existing mitigation programs for utility infrastructure. However, additional mitigation measures for SCI may be required by DENR to protect federally endangered species, and these will be negotiated on a project-by-project basis until mitigation is approved as part of an NCEPA process. Once these programs are successfully negotiated through an NCEPA process, they are considered incorporated into the SCI Plan. The Towns of Wendell and Zebulon can then use the SCI Plan to meet their NCEPA needs without further governing board action.

Your letter supports an adaptive management framework that identifies specific environmental goals, evaluates current programs to determine if they are sufficient to meet those goals, establishes a monitoring program to evaluate whether the goals are being met, and then reviews any changes that may be needed to support the goal. This approach is based in watershed management principles and we concur it would help protect watershed functions. However, the watersheds in the City of Raleigh and the eastern Wake County communities have already undergone extensive watershed analysis by the state and Wake County. They are subject to a wide range of local and state requirements. To take this planning and resulting protection measures to the next level, environmental goals for these watersheds need to be established that are based on a consensus of local, state and federal perspectives. The current MOA is structured to allow this planning to be incorporated within the SCI Plan at a later date. I appreciate your comments on this SCI Plan. If you have any questions, please call me at 919-760-1775.

Sincerely,

CH2M HILL

Ruth C. Swanek

Ruth Swanek
Project Manager

cc: Kenny Waldroup, City of Raleigh

Agency Comments - January 2009

NCDENR
North Carolina Department of Environment and Natural Resources

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

MEMORANDUM

TO: Ruth Swanek
Project Manager

FROM: Melba McGee
Environmental Review

RE: City of Raleigh Secondary and Cumulative Impacts (SCI) Management Plan for Public Utilities Infrastructure

DATE: January 30, 2009

The department appreciates the steps taken in reorganizing the draft plan and found it much easier to match long-range growth projections with the Towns of Wendell, Zebulon, Knightdale, Rolesville, Garner and Wake Forest. The merger agreements join the water and wastewater utilities of each of the individual municipalities with the City of Raleigh's Public Utilities Department. The infrastructure within the designated service area is being expanded due to population growth and the potential for economic development within the communities. As stated in the SCI Management Plan, each Town is unique and each has adopted mitigation measures that they believe protect their natural and cultural resources and the quality of life.

The department supports his collaborative effort and agrees that addressing SCI through a comprehensive planning process is the most effective way to streamline environmental project review and approval of future infrastructure projects. However, preparing a SCI Management Plan that incorporates appropriate mitigation measures that protect water quality and federal and state endangered species for the next ten years is very unique. The presence of these species and the measures needed for long-term protection is not only complex but very challenging.

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Based on the information provided by the NC Wildlife Resources Commission and the Division of Natural Resources and Planning Conservation, federally endangered species exist in the designated service area that includes the Neuse River, Crabtree Creek, Walnut Creek, Swift Creek, Middle Creek, Marks Creek, Buffalo Creek, Little River and Moccasin Creek. Federally threatened and endangered species are especially affected by SCI associated with growth. To reduce these impacts on aquatic ecosystems, state agencies with support from the US Fish and Wildlife Service (Service) made a joint effort to help local governments identify and strengthen mitigation measures regarding secondary growth impacts. The recommendations developed by this group provide municipalities with the best available science and, if followed, will mitigate impacts to water quality; to fish and wildlife and their habitat, and to federally threatened and endangered species where they occur. Because the Service supports the recommendations adopted by this group, in addition to the existing authority that requires the Service to conserve threatened and endangered species, the department would like to utilize their expertise in resolving the attached comments.

The department supports discussions between the Towns of Wendell and Zebulon and state and federal agencies about mitigation that may be required to protect aquatic species in the Little River watershed. However, there is consensus that the other merger communities continue to fall short of adopting effective mitigation measures for protecting federally endangered species. In the department's opinion these merger communities would benefit if they meet with state agencies and the Service and agree on how these communities could incorporate additional long-term protection for aquatic species in the study area. It is felt that the combined agency initiative would: (1) provide the most effective way to address SCI in all watersheds; (2) provide assurances to resource agencies that the plan incorporates a number of measures similar to those developed on a project-by-project bases; (3) reduce the number of concerns raised during additional draft reviews; and (4) help the City of Raleigh move the SCI Management Plan forward.

Thank you for the opportunity to review. If additional information is needed, please let me know.

Attachments

North Carolina Wildlife Resources Commission

Gordon S. Myers, Executive Director

MEMORANDUM

TO: Melba McGee, Environmental Coordinator
Office of Legislative and Intergovernmental Affairs

FROM: Shari L. Bryant, Piedmont Region Coordinator
Habitat Conservation Program

DATE: 21 January 2009

SUBJECT: Draft City of Raleigh Secondary and Cumulative Impact Management Plan for Public Utilities Infrastructure, Wake County, DENR Project No. 1488.

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 et seq.), North Carolina Environmental Policy Act (G.S. 113A-1 through 113A-10; 1 NCAC 25), North Carolina General Statutes (G.S. 113-131 et seq.), and North Carolina Administrative Code 15A NCAC 10I.0102.

The City of Raleigh merged its water and wastewater systems with the Towns of Garner, Rolesville, Knightdale, Wake Forest, Wendell, and Zebulon. The Secondary and Cumulative Impact (SCI) Management Plan for Public Utilities Infrastructure includes a brief description of planned water and sewer infrastructure, the impacts of growth resulting from construction of this infrastructure, and measures to mitigate growth impacts. Growth will be regulated by ordinances within each municipality. Separate environmental documents that address the direct impacts of individual water and sewer infrastructure projects would be prepared.

Neuse River, Crabtree Creek, Walnut Creek Swift Creek, Middle Creek, Marks Creek, Buffalo Creek, Little River, and Moccasin Creek flow through or drain portions of the Study Area. As detailed in our previous comments (Bryant, 28 May 2008), there are records for several federal and state listed species including the federal and state endangered dwarf wedgemussel (*Alasmidonta heterodon*) and Tar spinymussel (*Elliptio steinstansana*) within the Study Area.

The SCI Management Plan describes the existing and future land use conditions of the Study Area and the existing protection measures (e.g., riparian buffers) for each local municipality. Although there is discussion within the SCI Management Plan regarding implementation of more protective measures, it is not clear whether these would be adopted or what conditions would require their implementation. In our comments on the first draft of the SCI Management Plan (28 May 2008), we expressed concern that while many of the local municipalities implement protective measures that exceed those stipulated by state and federal programs, we felt that continued degradation in area streams may be

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expected without the implementation of more extensive measures, particularly in those watersheds that support federally listed species.

In watersheds that support federally listed species (i.e., Swift Creek, Middle Creek, White Oak Creek, Little River, Buffalo Creek and Moccasin Creek), the Memorandum of Agreement (MOA) or SCI Management Plan provides the following:

- As part of the environmental review for the Dempsey E. Benton Water Treatment Plant project, the City of Raleigh implemented additional protective measures in the Swift Creek watershed and developed a monitoring plan to document changes in water quality and aquatic habitat.
- Section 6.3 of the MOA states: "Mitigation measures developed by the Towns of Wendell and Zebulon in consultation with the US Fish and Wildlife Service, NC Wildlife Resources Commission and the Natural Heritage Program to address impacts to threatened and endangered species in the Little River watershed may be incorporated into the PLAN…"
- Section 9.3 of the MOA states: "The Parties agree that the PLAN may be used to describe potential SCI and existing mitigation programs for utility infrastructure projects that will provide service to the TOWNS of WENDELL and ZEBULON. The parties agree additional mitigation measures may be required by DENR for the federally threatened and endangered aquatic species and will be negotiated on a project-by-project basis for projects serving the TOWNS of WENDELL and ZEBULON…"

Provided Sections 6.3 and 9.3 of the MOA include the Little River watershed as well as the Buffalo Creek and Moccasin Creek watersheds (both within the jurisdiction of Wendell and Zebulon), then we feel that issues regarding secondary and cumulative impacts to federally listed species within these watersheds will be addressed. However, there does not appear to be any specific proposals to address secondary and cumulative impacts to federally listed species in Middle Creek or White Oak Creek watersheds (within the jurisdiction of Garner). We feel the measures detailed in the SCI Management Plan are not sufficient to protect federally listed species in these watersheds. Therefore, depending on the project type and scope, we feel that SCI within these watersheds also may need to be evaluated on a project-by-project basis.

We also encourage the each of the local municipalities to consider integrating additional measures to address issues of development and its impact on water quality and aquatic and terrestrial wildlife habitat in those watersheds that do not support federally listed species. Adopting ordinances that protect wide forested riparian corridors and the 100-year floodplain and that adequately treat stormwater in development areas in and outside of water supply areas are essential to protection of water quality and aquatic habitat in developing landscapes. Detailed information on these measures and supporting literature can be found in NCWRC's *Guidance Memorandum to Address and Mitigate Secondary and Cumulative Impacts to Aquatic and Terrestrial Wildlife Resources and Water Quality* (August 2002; http://www.ncwildlife.org/pg07_WildlifeSpeciesCon/pg7c3_impacts.pdf).

In their comments on the SCI Management Plan, the U.S. Fish and Wildlife Service suggested identifying specific environmental goals, evaluating and monitoring current programs to determine if these environmental goals are being met, and using adaptive management as needed to ensure environmental goals are met. One of our concerns with SCI Management Plans in general has been that these plans describe the measures currently in place and do not detail any additional measures that would be implemented in the future as growth occurs within the Study Area. In our comments on the first draft of the SCI Management Plan (Bryant, 28 May 2008), we questioned whether the measures included in the document were sufficient to protect water quality and aquatic and terrestrial wildlife resources within the

Study Area under existing conditions, let alone under build out conditions. Each of the watersheds will increase in percent imperviousness and several streams in the Study Area are 303(d) listed waters. With the increases in impervious surfaces described between existing and future land use, we are concerned that improvements water quality and aquatic habitat of listed streams are unlikely and additional streams in the Study Area may become impaired and added to the 303(d) list. We agree with the U.S. Fish and Wildlife Service that incorporating environmental goals, evaluating and monitoring current programs, then implementing measures to ensure goals are met would improve this SCI Management Plan, and SCI Management Plans in general.

Thank you for the opportunity to comment on this SCI Management Plan. If we can be of further assistance, please contact our office at (336) 449-7625.

ec: Tom Augspurger, USFWS
Sarah McRae, NHP
Fred Tarver, DWR
Rob Nichols, WRC

NCDENR

North Carolina Department of Environment and Natural Resources
Division of Natural Resources Planning and Conservation
Beverly Eaves Perdue, Governor | **Linda Pearsall, Director** | Dee Freeman, Secretary

22 January 2009

MEMORANDUM

TO: Melba McGee, Environmental Coordinator
Office of Legislative and Intergovernmental Affairs

FROM: Sarah McRae, Freshwater Ecologist
NC Natural Heritage Program

SUBJECT: Comments on the new draft of City of Raleigh Secondary and Cumulative Impacts Management Plan, Including the Communities of Garner, Knightdale, Rolesville, Wake Forest, Wendell, and Zebulon; Project #1488

The City of Raleigh (Raleigh) has completed a series of utility merger agreements with the Towns of Wake Forest, Rolesville, Garner, Knightdale, Wendell and Zebulon. These merger agreements combine the water and wastewater utilities of each of the individual municipalities with the City of Raleigh's Public Utilities Department. Raleigh's SCI Management Plan (SCIMP) is intended to address infrastructure for each of those Towns as well as the City of Raleigh.

Initial scoping comments (McRae, 07 August 2007) detail the rare, threatened and endangered species and significant natural heritage areas that are in the study area, and previous comments (McRae, 26 May 2008) document concerns that the NC Natural Heritage Program (NHP) has with the SCIMP. While the reorganization of the document makes it much easier to read and use, several of our initial concerns about mitigation of secondary and cumulative impacts remain.

NHP's biggest concern is that the SCIMP presents policies and ordinances that are currently in place, but there appears to be no definitive commitment to improve the measures according to resource agency recommendations. Each agency has gone through the plan and identified the problem areas, and through this process, it is clear that each town has different items it needs to work on in order to move the plan forward. In order to sign approve a comprehensive SCIMP for all the Wake County municipalities that will be effective for 10 years, NHP needs to see a commitment from the applicants that they will work to improve measures that the agencies have identified as problematic. We recognize that Wendell and Zebulon are working towards this commitment (and details are in the MOA), however, there are several agency concerns for the other municipalities that have not been addressed. We encourage each of the local municipalities to integrate

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additional conservation measures to address secondary and cumulative impacts on water quality and aquatic and terrestrial wildlife habitat in all watersheds – not just those that support federally listed species. Detailed information can be found from WRC's guidance memorandum at http://www.ncwildlife.org/pg07_WildlifeSpeciesCon/pg7c3_impacts.pdf or from the Department of Environment and Natural Resources' (DENR's) "Guidance for Preparing SEPA Documents and Addressing Secondary and Cumulative Impacts" located at: http://www.enr.state.nc.us/html/laws_regulations.html. Perhaps the best way to address these issues is to initiate the same process the consultants have pursued and are working on with Wendell and Zebulon with all the other local municipalities.

For those watersheds with rare aquatic species (Swift Creek, Middle Creek, Buffalo Creek, Little River, and Moccasin Creek), the US Fish and Wildlife Service (USFWS) has articulated a concern that several agencies, including NHP, have:

> "What is lacking at present is an assessment of whether the mix of programs [from each different municipality] will effectively conserve these rare species (and if not, how they should be modified to help ensure conservation). It reads as a list of good things being done by federal, state, local and private entities but lacks an analysis of whether that mix will be good enough for a specific rare species conservation outcome" (Benjamin, 27 October 2008).

NHP strongly urges the consultants to follow the advice of the USFWS by refocusing the draft SCIMP to identify specific environmental goals, evaluate secondary and cumulative impacts on a goal-specific basis, and design and adaptive approach that ensures progress toward those goals. By including the resource agencies in this process, it will do a lot to clarify how additional measures may be implemented in the future as growth occurs within the study area.

Please let me know if I can provide more information. The North Carolina Natural Heritage Program looks forward to a collaborative effort to help protect the State's natural diversity. If I can be of assistance, please do not hesitate to call me at 919-715-1751.

CC via email: Shari Bryant, WRC
Tom Augspurger, USFWS
Dale Suiter, USFWS
Fred Tarver, DWR
Hannah Stallings, DWQ

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Resources

Beverly Eaves Perdue, Governor

Dee Freeman, Secretary
Thomas A. Reeder, Director

January 28, 2009

MEMORANDUM

TO: Melba McGee, Environmental Coordinator
Office of Legislative and Intergovernmental Affairs

FROM: John Sutherland
Water Projects Section Chief

SUBJECT: City of Raleigh Public Utilities Department and merger communities
Draft Secondary & Cumulative Indirect Impacts Management Plan (Proj#1488)

The Division of Water Resources submits these comments following the review of the December, 2008, draft *City of Raleigh Secondary and Cumulative Impacts Management Plan for Public Utilities Infrastructure (Including the Communities of Garner, Knightdale, Rolesville, Wake Forest, Wendell, and Zebulon)*. The final version will be a secondary and cumulative indirect impact management plan ("plan") for the City of Raleigh Public Utilities Department's (CORPUD) service area, consisting of the combined existing and future sewer and water systems of Raleigh and the "merger members" (i.e., Garner, Knightdale, Rolesville, Wake Forest, Wendell, and Zebulon). CORPUD's intent is for the plan to accompany either an environmental assessment or environmental impact statement and serve in addressing, in part, the SCI associated with growth and development in CORPUD's service area.

1. Section 6.2.5, page 6-13, paragraph 2: Citing Wenger (1999), the plan reports a value of 30 feet of forested buffer as sufficient to shade a stream. This appears to be a typographic error on page 36 of Wenger (1999) because 10 meters does not convert to 30 feet. No where in the section concerning shading is 30 feet considered sufficient. Page 35 of Wenger (1999) states: "In a review of several articles on the subject, Osborn and Kovacic (1993) concluded that buffer widths of 10-30 m (33-98 ft) can effectively maintain stream temperatures."
2. Appendix H, page H-3, paragraph 1: The plan states: "Additionally, the City funds ten USGS [United States Geological Survey] gauging stations in Wake County. The locations of these sites are shown on the attached figure." It is not possible to ascertain the location of the USGS gauging stations from the figure provided on page H-8.

Thank you for the opportunity to comment. If you questions, comments or require clarification, please contact Fred Tarver at 919/715-5442, or by email at fred.tarver@ncmail.net.

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Summary of Document Changes to Agencies
May 2009

Proposed Changes to the City of Raleigh Secondary and Cumulative Impacts (SCI) Management Plan for Public Utilities Infrastructure

TO: NCDENR

FROM: CH2M HILL

DATE: May 2009

Based on comments received from NCDENR in January 2009 the following changes are proposed to the document:

Page Number and Section in December 2008 Plan Version	Proposed Text Changes
ES-2; text addition to second paragraph	In the process of developing the MOA, it was agreed that the Towns of Wendell and Zebulon did not have adequate management of SCI and that documentation of adequate SCI management would be developed through other on-going environmental documents.
Page 1-2; Introduction – text addition to last paragraph	In the process of developing the MOA, it was agreed that the Towns of Wendell and Zebulon did not have adequate management of SCI and that documentation of adequate SCI management would be developed through other on-going environmental documents. The SCI Plan can be used to describe potential SCI and existing mitigation programs for utility infrastructure projects that will provide service to the Towns of Wendell and Zebulon. In addition, the City of Raleigh is currently developing an SEPA EA to evaluate the impacts of a proposed expansion of the Little Creek Wastewater Treatment Plant (WWTP). The City is also developing a NEPA Environmental Impact Statement (EIS) to evaluate the impacts of the proposed Little River Reservoir. The SCI Management Plan does not cover the SCI for the proposed Little Creek WWTP or Little River Reservoir. Through the Little Creek EA process, Wendell and Zebulon are actively engaged in developing adequate SCI management strategies and it is anticipated that new ordinances will be required. When the Agencies agree to the SCI management strategy for the Little Creek EA, these will be added to the SCI Plan as part of the biennial report process described in the MOA. The biennial report is a mechanism that identifies significant changes in actual land use or utility infrastructure that were not anticipated or

Page Number and Section in December 2008 Plan Version	Proposed Text Changes
	described in the SCI Management Plan. The biennial report also describes significant or proposed changes to the utility infrastructure plans; land use plans; sediment and erosion control programs; stormwater programs; ordinances related to buffers and open space requirements; and other major management measures. The SCI Management Plan is actually an attachment to the MOA. The North Carolina Wildlife Resources Commission developed a guidance document to address secondary and cumulative impacts to aquatic and terrestrial wildlife resources and water quality in August 2002 (NCWRC, 2002). The guidance document was developed based on recommendations of a working group to evaluate SCI that was assembled by DENR. The City of Raleigh and each of the merger communities are aware of the guidance document. As opportunities arise for updating ordinances and policies that address SCI, the local governments will consider the recommendations included in the WRC guidance document. Modifying ordinances is a public process; thus each local government's ordinances will be unique but are intended to protect environmental resources when evaluated as a whole.
Page 1-3; Section 1.1 - text addition	The SCI Plan can also be used as a building block for an adaptive management process for habitat conservation and management encouraged by U.S. Fish and Wildlife Service (USFWS). The SCI Plan and MOA allow for additional mitigation on a project specific basis and also require biennial reporting on the status of SCI related management efforts. The MOA allows additional SCI management efforts required on a project specific basis to be included as part of the SCI Plan through the biennial reporting process and also includes provisions where DENR or the City can update the SCI Plan. This flexibility allows the SCI Plan to become an important component of adaptive management.
Page 1-4; Section 1.2 – text clarification	The USA represents areas where the County envisions that a municipality will ultimately provide utility service. A town or city does not have zoning authority outside the ETJ even in areas within the USA, which effectively mean no jurisdiction by the town or city. Wake County determines the USA and a town or city does not have the authority to make modifications to the boundaries. New development within the USA is according to town standards if annexation is requested and to Wake County standards if annexation is not requested. If the area is not annexed, no infrastructure is extended into the development.

Page Number and Section in December 2008 Plan Version	Proposed Text Changes
Page 2-1; Section 2 – text addition	City of Raleigh has no jurisdiction within the areas where contract agreements are in place.
Page 3-1; Section 3 – text addition	Environmental goals for the City are established in the Comprehensive Plan and its elements which include infrastructure planning, environmental protection, parks and recreation, historic preservation, and regional and interjurisdictional coordination.
Page 4-1; Section 4, Table 4-1 - text addition	Clarification on when USA only expanded in watershed.
Page 6-13; Section 6.2.5 – text clarifcation	The appropriate width of a buffer will vary dependent upon the purpose of the buffer. For example, Wenger (1999) indicates that approximately 30 feet (10 meters) of forested buffer is sufficient to shade a stream and moderate instream temperatures for smaller streams that do not support cold water fisheries.
Page 7-2; Section 7 and Table 7-1	*See Attached – Added discussion on open space; riparian buffer and floodplain protection*
Page 7-4; Section 7.2 – added new text	Wake County has established a stormwater credit system that provides incentives for better site design and locating new development that causes less impact to aquatic resources. Approved methods to receive credit include: disconnected impervious surfaces, reforestation, and cluster and open space subdivisions. These stormwater practices reduce generation of stormwater, reduce size and cost of stormwater storage and provide partial removal of pollutants.
Page 8-1; Section 8	The City of Raleigh has jurisdiction in the Crabtree Creek, Falls Lake, Neuse River, Swift Creek, and Walnut Creek watersheds. Only the City of Raleigh's USA extends into Marks Creek; therefore; the City of Raleigh currently does not have jurisdiction in this watershed.
Page 8-3; Table 8-1; added new text to reflect addition to stormwater ordinance	New developments that are upstream of documented structural flooding must submit a stormwater impact analysis. The analysis must evaluate the flood level differences between pre-development and post-development for the 25, 50, and 100-year storm events.

Page Number and Section in December 2008 Plan Version	Proposed Text Changes
Page 9-1; Section 9	The Town of Wake Forest has jurisdiction in the Neuse River and Fall Lake watersheds.
Page 10-1; Section 10	The Town of Rolesville has jurisdiction in the Neuse River watershed. Only the Town of Rolesville's USA extends into Buffalo Creek; therefore; the Town of Rolesville currently does not have jurisdiction in this watershed.
Page 11-1; Section 11	The Town of Garner has jurisdiction in the Swift Creek and Walnut Creek watersheds. Only the Town of Garner's USA extends into Middle Creek and Neuse River; therefore; the Town of Garner currently does not have jurisdiction in these watersheds.
Page 12-1; Section 12	The Town of Knightdale has jurisdiction in the Marks Creek and Neuse River watersheds.
Page 13-1; Section 13	The Town of Wendell has jurisdiction in the Buffalo Creek, Little River and Marks Creek watersheds.
Page 14-1; Section 14	The Town of Zebulon has jurisdiction in the Little River and Moccasin Creek watersheds.
Appendix H	Added map of gaging stations.

Section 7

Wake County recently completed a series of planning documents to ensure that growth occurs in a manner that will protect environmental resources and meet the needs of its citizens. These Wake County documents include the Unified Development Ordinance (UDO), Comprehensive Watershed Management Plan, Land Use Plan, Consolidated Open Space Plan, Growth Management Strategy, Transportation Plan, Comprehensive Groundwater Investigation, Stormwater Management Task Force Reports, and Air Quality Task Force Report.

Appendix B identifies and discusses these County programs in detail while an overview summary of erosion and sediment control, stormwater management, air quality, historic preservation, and the draft Little River Reservoir Water Supply Watershed Interlocal Agreement is provided in this section since these programs in particular are administered by the County for many of the merger communities.

The following summary (Table 7-1) addresses selected regulations and programs from an environmental management and land use perspective. These local initiatives to prevent impacts to natural resources will offset future impacts resulting from growth.

TABLE 7-1
Summary of Selected Existing Wake County Programs

Program	Summary
Erosion and Sediment Control (Unified Development Ordinance Article 10)	Erosion and sediment control permit required for land disturbing activity over 1 acre. Silt fences and construction entrances are required on all sites, even those that are less than 1 acre. Requires custom sediment basins sized according to drainage area. Requires silt fencing, perimeter ditches, or perimeter swales. Time of exposure limited to 15 days after finished grading. Requires plans to identify areas subject to severe erosion, limit time of exposure, and limit exposed area. Land disturbance in proximity to a lake or natural watercourse requires an undisturbed 50 foot buffer provided the undisturbed zone is of sufficient width to confine visible siltation within the first 20 feet. Encourages contractor education and training related to erosion and sediment control.
Stormwater and Impervious Surface Limits (Unified Development Ordinance Article 9)	Post-development site runoff curve number may not exceed curve numbers contained in Article 9, Part 2 of the UDO based on precipitation depth of 3-inches over a 24-hour period. Stored water must be drained over a period of not less than 2 days or more than 5 days. Stormwater credit system provides incentives for better site design and locating new development that causes less impact to aquatic resources. Approved methods include: disconnected impervious surfaces, reforestation, and cluster and open space subdivisions. Practices reduce generation of stormwater, reduce size and cost of stormwater storage and provide partial removal of pollutants. Impervious surface limits in water supply watersheds range from 6 percent to 36 percent for non-residential areas and up to 30 percent for residential areas. Development that exceeds 24 percent imperviousness is required to implement stormwater BMPs. Stormwater permits are required for non-residential projects which cumulatively disturb more than 1/2 acre. Comply with Neuse River Basin NSW stormwater requirements. Submitted NPDES Phase II permit application in March 2003; draft permit issued by DWQ Member of NC Clean Water Education Partnership (CWEP) providing stormwater education. CWEP ran educational TV ads on proper use of lawn chemicals and vehicle maintenance. Stormwater Management Task Force established.
Riparian Buffers (Unified Development Ordinance Article 11)	In Water Supply Watersheds: (Swift Creek; Little River; Falls Lake and Smith Creek) Buffer requirements: – 100 feet from the flood pool elevation of the water supply impoundment (measured perpendicular to the shoreline) – 50 feet from the normal pool elevation of any non-water supply impoundment with a drainage area of 25 acres or more – 100 feet along perennial streams on the most recent edition of U.S. Geological Survey (USGS) topographic maps. Inner 50 feet (Zone 1) is undisturbed vegetated. Outer 50 feet (Zone 2) is stable vegetated.

TABLE 7-1
Summary of Selected Existing Wake County Programs

Program	Summary
	– 50 feet along non-perennial watercourse, channel, ditch, or similar physiographic feature with a drainage area of 25 acres or more – 30 feet from the normal pool elevation of a non-water supply impoundment with a drainage area of at least 5 acres but less than 25 acres – 30 feet along each side of a watercourse, channel, ditch, or similar physiographic feature with a drainage area of at least 5 acres but less than 25 acres • Minimum building setback from all buffers is 20 feet except the 100-foot perennial stream buffer, which has no required setback. • The inner 50 feet (Zone 1) of the 100-foot buffer required along perennial streams must either be platted as part of a development lot and included within a conservation easement, or set aside as a reserved conservation parcel. In Resource Conservation Overlay: (Lower Swift Creek Basin (Lake Benson to Johnston County line); Bass Lake; Robertson's Pond) • Buffer requirements: – 100 feet required around special water impoundment (Special watershed: a watershed area in Wake County zoning jurisdiction that contains a special water impoundment(s) that provide(s) significant wildlife habitat, characteristics unique to Wake County, public recreation, or potential for future recreation) – 50 feet along each side of a stream or impoundment draining 25 or more acres of land – 25 feet along each side of a stream or impoundment which drains between 5 and 25 acres • Vegetation within buffers will be undisturbed except for specific uses (i.e., boat docks, greenways, and drainage facilities or utilities, among others). • Minimum building setback from buffer is 20 feet. All riparian surface waters in Wake County's jurisdiction are required to have a 50-foot buffer if the feature is present on either the most recent version of the soil map or 7.5-minute quadrangle topographic map prepared by the USGS. The first 30 feet of buffer (Zone 1) must remain essentially undisturbed while the other 20 feet (Zone 2) are to be covered with vegetation but certain uses would be allowed in this zone.
Floodplain Protection (Unified Development Ordinance Article 14)	In floodways and the 100-year floodplain: • No new structures shall be constructed. • No fill shall be placed in floodway unless a no-rise certification is approved. • Encroachments in floodway are limited to roads, bridges, culverts, or water-dependent structures, etc., and no-rise certification is required. In special flood hazard areas (non-Federal Emergency Management Agency [FEMA] potential flood areas based on the location of flood hazard soils), areas that drain 4 acres or more usually require a flood study if there is an encroachment into the flood hazard soils.

7.1 Open Space Preservation

Open Space Preservation

Open space helps minimize the overall level of imperviousness within a watershed. Open space that preserves wetlands and riparian areas also serves to filter pollutants from upland (upstream and draining to the open space) developed areas within a watershed. Open space can serve other ecological and human functions, such as providing high quality habitat to allow for greater species diversity, and passive and active recreation opportunities for the area's citizens. In Wake County, open space protection can provide additional land around the municipalities that serves as wildlife corridors between important habitat areas within the municipal boundaries.

Wake County has several mechanisms to preserve open space. These include open space plans and initiatives, land use plans, and unified development ordinance (UDO) provisions. In addition, programs such as the Voluntary Agricultural Districts help preserve the County's rural character. Each of these initiatives is described in greater detail below.

Wake County Consolidated Open Space Plan

The purpose of Wake County Consolidated Open Space Plan accepted by the Board of Commissioners on March 17, 2003, and revised in June 2006 is to protect and conserve County land and water for current residents and future generations. Open space is defined as protected lands and waters that are owned and managed by the County, its public-sector partners, the municipal governments of Wake County, State of North Carolina, the United States government, and the County's private-sector partners, including non-profit land trusts. Open space consists of any parcel or area of land and water that is devoted to:

- Preservation of natural resources
- Managed production of resources (forest and farm land)
- Outdoor recreation
- Preservation of historic and cultural property
- Protection of scenic landscapes

The Wake County Consolidated Open Space Plan sets forth a plan of action to identify and protect the County's natural resources, historic areas, and other special environmental and cultural features. The purpose of the Plan is to identify, evaluate, and prioritize resources; establish preservation goals; and guide the implementation of an open space program. One goal of the Plan is to eventually protect a minimum of 30 percent of the county's land area, or roughly 165,000 acres. The County has partnered with each of its 12 municipalities to support open space planning. The County has awarded monetary grants and asked that each municipal government develop and adopt a local open space plan.

One of the main goals that was established for the Open Space Plan prior to its development was the protection of water quality and important ecological features. The open space planning process was integrated with the watershed planning process at the inception of both plans. The Watershed Management Plan (CH2M HILL, 2003) used a geographic information system (GIS) model to identify and prioritize watershed areas for protection within the county based on important human use and ecological use perspectives. For

example, stakeholders identified drinking water supplies as the most important watershed use. Other important uses included rare species habitats. This feedback from the stakeholders was used to prioritize small watershed areas that warranted additional protection.

The data presented in Section 5 indicate that approximately 8 percent of future lands are classified as open space. This number does not include future agricultural land, vacant land, lakes, and protected riparian buffers and floodplains. Thirty thousand acres of land throughout Wake County has been identified for targeted acquisition; these targeted lands protect water supply, limit exposure to flooding, support water contact recreation, improve access to outdoor resources, and protect wetlands and unique plant and animal species native to the County. The lands were targeted through GIS methodology. Prohibiting future development and building in flood-prone areas can preserve an estimated 60,000 acres of land. Innovative methods for subdividing and developing land could conserve as much as 22,000 acres of land in future years.

Final cost estimates to acquire the land to implement the Open Space Plan were developed as part of the plan. It was estimated that Open Space Program costs would vary as a function of the methods of preservation (outright purchase, conservation easements, stream buffers, etc.). Outright acquisition of all parcels would cost hundreds of millions of dollars. The Wake County Open Space Bond allowed $15 million in FY2000 and $26 million in FY2005 to begin implementation of the Open Space Plan which allow for additional implementation of the Open Space System priorities by providing the "matching" funds portion of grants.

Implementation of the Wake County Open Space program has been on-going for years, but began in earnest in 1999 with the acquisition of key parcels of land. After the completion of the 2003 Consolidated Open Space Plan, the County began to implement elements of the Plan by first focusing its efforts on 9 key corridors and watersheds; five of these key corridors are located in the Raleigh SCI Management Plan area. As of May 2006, the County has made progress in conservation of open space, adding an estimated 3,200 acres to its open space program. The following provides a snapshot of this success within the five priority corridors that are located wholly or in part in the Raleigh SCI Management Plan study area:

1) Neuse River Corridor - 145.11 acres protected at a cost of $1,805,724

2) Hominy Creek Corridor 7.69 acres protected at a cost of $38,280
3) Steep Hill Creek Corridor 125.82 acres protected at a cost of $527,540
4) Swift Creek Corridor 178.81 acres protected at a cost of $770,852
5) Marks Creek Corridor 359.02 acres protected at a cost of $3,980,000

Wake County and the appropriate municipalities continue to target preservation of these priority corridors.

Open space will be acquired through various means. Some examples of acquisition methods include:

- Outright purchase by Wake County

- Negotiation of a conservation easement or other agreement between Wake County and the property owner
- Land dedication requirements, such as the County's stream buffer rules
- Donation or bargain sale by property owners for Federal and State tax incentives
- Cooperative arrangements with other governmental agencies

Fee simple acquisition is the most common method for open space preservation.

Voluntary Agricultural Districts

The Wake Soil and Water Conservation District Board of Supervisors has created a Voluntary Agricultural District Program in Wake County. This creates additional open space within the County. The purpose of this program is to:

- Increase the visibility of farm communities in the county
- Focus more attention on the importance of these communities to the county
- Work with the county to make it easier for those who wish to stay in farming to continue doing so
- Advise the county on issues affecting agriculture
- Give farm owners a greater voice in local government decisions affecting their communities
- Reduce conflicts between farm and non-farm land uses

The guidelines for this program are covered by State Statute (NCGS 106-735 through 106-743, *Farmland Preservation Enabling Act*). Since these statutes were enacted, 20 county programs have been created. Key components of the Wake County Voluntary Agricultural program are:

- A seven-member Agricultural Advisory Board appointed by the County Board of Commissioners manages the program: five farm owners, one agribusiness representative, and one Soil and Water Conservation District Supervisor.
- The Advisory Board considers applications from landowners to form agricultural districts, conduct hearings on public projects (roads, schools, etc.) that might negatively effect agriculture in a district, and advise the county on other issues affecting local agriculture.
- Farmers wishing to participate in the program sign a simple application indicating that they plan to remain in farming for the next 10 years. They may withdraw from the program at any time.
- Signs are erected along the roads in Agricultural Districts identifying them as such.
- Participants in the program are exempt from paying assessments for water/sewer lines extended past their property.

- All purchasers of land near agricultural districts are notified that they should expect dust, machinery noise, animal waste/chemical odors, and other similar elements associated with living in a farming area.

Agricultural Tax Relief Program

The Wake Soil and Water Conservation District Board of Supervisors works cooperatively with landowners to encourage farmland preservation and protection. This voluntary program, which was established in 1998, includes efforts to offer proper estate planning to farmers, and to protect farms through the purchase of development rights. The latter program has received limited funding but has been successful where funding was available. In addition, the County provides tax relief to qualifying farm owners to help offset tax burdens as property values rise in the county. Typically, as an area develops, property values rise and agricultural use of the land becomes economically unfeasible. The tax relief program helps address this issue.

7.2 Riparian Buffers and Floodplain Protection

This section describes the County's riparian buffer and floodplain protection programs.

7.2.1 Riparian Buffers

Wake County's Riparian Buffer Protection Program meets or exceeds the Neuse River Nutrient Sensitive Waters (NSW) rules (15A North Carolina Administrative Code [NCAC] 2B.0233), which require that existing riparian buffer areas be protected and maintained on both sides of intermittent and perennial surface waters. A 50-foot buffer consisting of 30 feet of undisturbed forest and 20 feet of grassed and/or vegetated area must be maintained. The rule does not require restoration of buffers that no longer exist. Perennial and intermittent stream determinations are to be based on soil survey maps prepared by the Natural Resources Conservation Service or the most recent version of USGS topographic maps (7.5 minute quadrangle). The rule provides a number of exemptions.

Article 11 of the UDO requires that all riparian surface waters in Wake County's jurisdiction have a 50-foot buffer if the feature is present on either the most recent version of the Wake County soil survey map or 7.5-minute quadrangle topographic map prepared by the USGS. Wider riparian buffers are required in water supply watersheds and Resource Conservation Overlay Districts as described below.

According to the Article 11 of the UDO, the following buffer requirements apply in water supply watersheds:

- 100 feet from the flood pool elevation of a water supply impoundment (measured perpendicular to the shoreline)
- 50 feet from the normal pool elevation of a non-water supply impoundment with a drainage area of 25 acres or more
- 100 feet along perennial streams on the most recent edition of USGS topographic maps. Inner 50 feet (Zone 1) is undisturbed vegetated. Outer 50 feet (Zone 2) is stable vegetated.

- 50 feet along non-perennial watercourse, channel, ditch, or similar physiographic feature with a drainage area of 25 acres or more
- 30 feet from the normal pool elevation of the water impoundment with a drainage area of at least 5 acres but less than 25 acres
- 30 feet along each side of a watercourse, channel, ditch, or similar physiographic feature with a drainage area of at least 5 acres but less than 25 acres
- Minimum building setback from all buffers is 20 feet, except the 100-foot perennial stream buffer, which has no required setback.
- The inner 50 feet (Zone 1) of the 100-foot buffer required along perennial streams must either be platted as part of a development lot and included within a conservation easement, or set aside as a reserved conservation parcel.

Lower Swift Creek Basin (Lake Benson to Johnston County line) and Robertson's Pond are located within the Raleigh SCI study area and within the County's Resource Conservation Overlay districts. According to the Article 11 of the UDO in a Resource Conservation Overlay district, the following buffers apply:

- 100 feet required around special water impoundment (Special watershed: a watershed area in Wake County zoning jurisdiction that contains a special water impoundment[s] that provide[s] significant wildlife habitat, characteristics unique to Wake County, public recreation, or potential for future recreation).
- 50 feet along each side of a stream or impoundment draining 25 or more acres of land
- 25 feet along each side of a stream or impoundment that drains between 5 and 25 acres
- Vegetation within buffers will be undisturbed except for specific uses (i.e., boat docks, greenways, drainage facilities, or utilities, among others).
- Minimum building setback from buffer is 20 feet.

7.2.2 Floodplain Development Regulations

Regulating development in floodplains serves two main purposes:

- Limiting damage from storms
- Preventing water quality degradation

The County's ordinances that limit development within the floodplain exceed FEMA requirements. In recognition that flood hazard areas are subject to periodic inundation (flooding), which may result in the loss of life or damage to property as well as other adverse effects, these areas are subject to regulations designed to:

- Restrict or prohibit uses dangerous to public health, safety, and property when flooded
- Require that uses vulnerable to floods be protected against flood damages at the time of initial construction
- Preserve the flood-carrying capacity of floodplains

- Control filling, grading, dredging and other obstructions that may increase flood damages
- Prevent or regulate the construction of flood barriers that will divert floodwaters and/or increase flood hazards elsewhere
- Protect individuals from purchasing lands that are unsuitable for their intended purposes because of flood hazards
- In floodways and the floodway fringe, which are the two elements that compose the 100-year floodplain:
  - No new structures shall be constructed or placed in the 100-year floodplain, with few exceptions (i.e., water-dependent structures)
  - No fill shall be placed in the 100-year floodplain with few exceptions (i.e., onsite cut and fill balance), and no-rise certification is required
  - Encroachments in floodway shall be limited (roads, bridges, culverts or water dependent structures, etc.), must be flood-proofed, and cannot raise the base flood elevation above the elevation with floodway as established by the Floodway Data Tables

Wake County regulates additional areas outside the 100-year floodplain that still have potential for flooding. Special Flood Hazard Areas identified on Flood Insurance Rate Maps (FIRMs) provided by the National Flood Insurance Program arm of FEMA, as well as Flood Hazard Soils Areas identified in *The Soil Survey, Wake County, North Carolina*, are regulated by Wake County. Encroachments (fill material, roads, buildings, etc.) in these areas are discouraged, and when allowed, must meet rigorous design standards. In addition it must be proven (usually through a flood study) that the encroachment does not adversely affect existing or proposed onsite structures or offsite properties.

In FEMA-identified Special Flood Hazard Areas where a detailed flood study has already been performed, 100-year flood limits and elevations as well as the floodway have been delineated; therefore, an additional flood study is not needed. Where FEMA has not performed a detailed flood study, the entire floodplain area is considered to be a floodway until a flood study is performed at the applicant's expense.

In new, detailed study areas and limited, detailed study areas (which are unnumbered A Zones), FEMA mapping will illustrate the 100-year floodplain under existing and future (buildout) conditions throughout Wake County. As a result, more than half of the river miles and associated floodplains in the Wake County jurisdiction will be mapped with future conditions (100-year floodplain noted). Upon completion of this process, a change to the UDO will occur that will restrict uses (i.e., solid water disposal facilities, hazardous waste management facilities, salvage yards, and chemical storage facilities, etc.) in the future floodplain areas and require structures to be elevated above future floodplain elevations.

Agency Comments - June 2009

North Carolina Wildlife Resources Commission

Gordon Myers, Executive Director

MEMORANDUM

TO: Ruth Swanek
CH2M HILL

FROM: Shari L. Bryant, Piedmont Region Coordinator
Habitat Conservation Program

DATE: 22 June 2009

SUBJECT: Additional Information Regarding the City of Raleigh Secondary and Cumulative Impact Management Plan for Public Utilities Infrastructure.

Biologists with the North Carolina Wildlife Resources Commission (NCWRC) have reviewed the additional information regarding the Raleigh Secondary and Cumulative Impact Management Plan for Public Utilities and Infrastructure (SCI Management Plan). 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 et seq.), North Carolina Environmental Policy Act (G.S. 113A-1 through 113A-10; 1 NCAC 25), North Carolina General Statutes (G.S. 113-131 et seq.), and North Carolina Administrative Code 15A NCAC 10I.0102.

The City of Raleigh merged its water and wastewater systems with the Towns of Garner, Rolesville, Knightdale, Wake Forest, Wendell, and Zebulon. The SCI Management Plan includes a brief description of planned water and sewer infrastructure, the impacts of growth resulting from construction of this infrastructure, and measures to mitigate growth impacts. Growth will be regulated by ordinances within each municipality. Separate environmental documents that address the direct impacts of individual water and sewer infrastructure projects would be prepared.

Neuse River, Crabtree Creek, Walnut Creek Swift Creek, Middle Creek, Marks Creek, Buffalo Creek, Little River, and Moccasin Creek flow through or drain portions of the Study Area. There are records for several federal and state listed species including the federal and state endangered dwarf wedgemussel (*Alasmidonta heterodon*) and Tar spinymussel (*Elliptio steinstansana*) within the study area.

We continue to be concerned about potential SCI impacts within some of the Urban Service Areas (USA), particularly those that are located within watersheds that support federally listed species (i.e., Swift Creek, Middle Creek, White Oak Creek, Little River, Buffalo Creek and Moccasin Creek). Based on Figure 1-1 in the SCI Management Plan, it appears that Garner's USA extends to Middle Creek watershed, and Rolesville and Raleigh USAs extend to Buffalo Creek watershed.

Mailing Address: Division of Inland Fisheries • 1721 Mail Service Center • Raleigh, NC 27699-1721
Telephone: (919) 707-0220 • **Fax:** (919) 707-0028

22 June 2009
Raleigh SCI Management Plan
Additional Information

We recognize that local municipalities do not have jurisdiction within their USAs. We also understand the first environmental document that is required for water and/or sewer infrastructure would allow for a review of SCI that may indicate the need for additional measures to protect federally listed species. However, it is not clear to what extent water and sewer infrastructure could be expanded into one of these USAs without triggering an environmental document.

We feel the SCI Management Plan should include a provision for water and/or sewer infrastructure that is extended into USAs that are within watersheds that support federally listed species. This provision would include that the local municipality, at a minimum, do one of the following for those extensions that do not require an environmental document and occur prior to the first environmental document for the watershed:

1. Implement measures comparable to those that they already have for watersheds that support federally listed species. So, for example, if Garner extends water and/or sewer to its USA in Middle Creek watershed, in the absence of an environmental document, Garner would, at a minimum, adopt the protective measures for the Swift Creek watershed in the Middle Creek watershed.
2. Implement measures that are comparable to other local municipalities within the watershed that have protective measures for federally listed species. So, for example, once the protective measures for Wendell are determined for the Buffalo Creek watershed, in the absence of an environmental document, Raleigh and Rolesville would, at a minimum, adopt Wendell's protective measures when water and/or sewer is extended into their USAs in Buffalo Creek.

Thank you for the opportunity to comment on this SCI Management Plan. If we can be of further assistance, please contact our office at (336) 449-7625.

ec: Melba McGee, OLIA
Tom Augspurger, USFWS
Angie Rodgers, NHP
Fred Tarver, DWR

North Carolina Department of Environment and Natural Resources
Division of Natural Resources Planning and Conservation

Beverly Eaves Perdue
Governor

Linda Pearsall
Director

Dee Freeman
Secretary

MEMORANDUM

Date: 24 June 2009

To: Ruth Swanek
CH2M Hill

From: Angie Rodgers, Freshwater Ecologist ajr
North Carolina Natural Heritage Program (NCNHP)

Subject: Additional comments on City of Raleigh Secondary and Cumulative Impacts Management Plan for Public Utilities Infrastructure

The City of Raleigh (City) has completed a series of utility merger agreements with the Towns of Wake Forest, Rolesville, Garner, Knightdale, Wendell and Zebulon. These merger agreements combine the water and wastewater utilities of each of the individual municipalities with the City of Raleigh's Public Utilities Department. Raleigh's SCI Management Plan (SCIMP) is intended to address infrastructure for each of those Towns as well as the City of Raleigh.

NC Natural Heritage Program has provided comments on previous versions of the management plan. The following comments are in response to changes following an April 27, 2009, meeting with the natural resource agencies. We remain concerned about protections for watersheds supporting federally listed species. Our specific concern lies in areas that are currently considered Urban Service Areas (USA) that are also in watersheds with federally listed species (Swift Creek, Middle Creek, White Oak Creek, Little River, Buffalo Creek, and Moccasin Creek). We understand that the first environmental document required for water and/or sewer infrastructure in these areas will allow for a review of secondary and cumulative impacts in watersheds supporting federally listed species. However, it is unclear to what extent water/sewer infrastructure can be extended before an environmental document is triggered.

Therefore, NHP encourages the City to include language in the document regarding protections for watersheds supporting federally listed species when water/sewer infrastructure is extended into Urban Service Areas. Of particular concern are extensions that may not require environmental review or occur before an environmental document has been prepared for a project within those watersheds.

NHP recommends that in a case as noted above, the town or municipality adopt measures for protection of federally listed species' watersheds that are comparable for a watershed supporting federally listed species already within their jurisdiction. If the town or municipality does not currently

have jurisdiction over a watershed supporting federally listed species, then we recommend the town adopt measures comparable to another town with jurisdiction in a portion of that watershed.

To summarize, the purpose of this recommendation is to ensure that watersheds supporting federally listed species have protective measures in place when infrastructure is extended into them. While we understand that a review is triggered with an environmental document, we encourage the City to include clarifying language regarding protective measures for these watersheds in the event that infrastructure extensions occur without triggering an environmental review.

NHP appreciates the opportunity to provide comments. If you have questions I can be reached at angeline.rodgers@ncdenr.gov or (828) 689-5783.

E-copy: Melba McGee, OLIA
Shari Bryant, NCWRC
Sarah McRae, NCNHP
Tom Augspurger, USFWS
Fred Tarver, NCDWR

Response to Agency Comments
June 2009

Benson, Kathryn/RDU

From: Benson, Kathryn/RDU
Sent: Friday, June 26, 2009 9:11 AM
To: Angie Rogers (angeline.rodgers@ncdenr.gov); Shari Bryant (shari.bryant@ncwildlife.org)
Cc: Kreutzberger, Bill/CLT; Swanek, Ruth/RDU; 'Waldroup, Kenneth'; Melba McGee (Melba.McGee@ncmail.net)
Subject: Raleigh SCI Comment Response

Hi Shari and Angie.

We have reviewed your June 2009 comments on the revised draft City of Raleigh Secondary and Cumulative Impacts Management Plan. We understand your concern about protecting watersheds that contain habitat for federally listed species. We also understand that your main concern is in regard to future extensions into urban service areas within these watersheds that may not trigger a SEPA document. However, we do not believe that your proposed solution to have local governments extend practices which have been adopted in other watersheds is workable because of the way the development process occurs. We are proposing an alternative.

The SCI Management Plan is a Plan to meet SEPA requirements and is not intended to address issues for projects that fall outside the SEPA process. Projects that fall outside the SEPA process are those which require a NEPA document or small projects that would not trigger any environmental document. In the NEPA process the lead federal agency could require additional documentation than what is contained in these Plans. In addition requirements can be implemented through applicable permitting process of State and Federal agencies. Many of these private developments which would occur in the USA should be subject to 404/401 permitting requirements; these permitting agencies would require Section 7 consultation with US Fish and Wildlife Service.

We believe that the biennial reporting mechanism included in the Memorandum of Agreement for the use of the SCI Management Plan could be used to address your concerns. Specifically, the City and merger communities would note where any water and sewer services had extended into watersheds that have federally listed species habitat that had not been served earlier. This would enable the DENR agencies to evaluate the information and determine if a dialog should begin to ensure continued protection of these species.

Our hesitancy to include your proposed requirements in the SCI documents is that they may be difficult for local governments to track. Much of the development that would fall below SEPA requirements would be from private developers who later deed over infrastructure to the City of Raleigh. While that is easy to address as part of the biennial review process, it will require close tracking by different departments within local governments. Many of these private developments should also be subject to 404/401 permitting requirements; these permitting agencies would require Section 7 consultation with US Fish and Wildlife Service. Therefore, on a two year basis, growth in the USA areas should be minimal.

Thus, we believe that including information regarding development into USA areas which contain federally listed species habitat would provide a solution that will meet your concerns while being implementable at the local level.

Please call me if you have any questions at 919-607-4347 or Bill Kreutzberger at 704-543-3269. We will be submitting the document to the Clearinghouse today.

Thanks-

Kathryn

Kathryn Benson, PE| CH2M HILL| **Raleigh Office** (919) 875-4311 x 51750 **|Mobile** (919) 607-4347 **|Email - Kathryn.Benson@ch2m.com**

Written Comments on Public Draft – August 2009

Good evening. My name is Jeri Gray and I live at 2406 Stafford Ave in Raleigh. I appreciate the opportunity to offer my thoughts about Raleigh's Secondary and Cumulative Impacts Management Plan.

Raleigh's Secondary and Cumulative Impacts Management Plan details how Raleigh and its merger partners intend to mitigate the growth-related impacts of a massive water and sewer infrastructure expansion. It is therefore an extremely important document. The plan should demonstrate an exceptional commitment to protecting stream quality, groundwater quality, air quality, land resources, and quality of life, not only in Raleigh's service area but wherever the effects of infrastructure-related growth threaten the environment.

The question we are here to consider is, does this management plan demonstrate that the planned infrastructure is necessary, identify all the secondary or cumulative impacts, and show an exceptional commitment to hold in check the growth-related environmental impacts of this massive infrastructure expansion.

My opinion is that it does not. While I think the plan is deficient in a number of respects, I will focus on just a few.

First, the memorandum of agreement between the N.C. Department of Environment and Natural Resources that allows for this comprehensive SCI plan does not hold Raleigh and its partners to a high enough standard of proof and commitment.

One of the reasons Raleigh puts forth for a SCI plan that covers all planned water and sewer infrastructure is that it provides a “holistic view of the growth-related impacts” of the planned infrastructure. However DENR has not taken a holistic view by requiring Raleigh and its partners to show that the massive infrastructure expansion is necessary and examine alternatives to the expansion.

The SCI plan claims that anticipated growth would occur with or without the planned infrastructure, stating that

“because of the strong local economy and location of the Study Area relative to viable employment opportunities, growth in the area is likely to occur even without new utility infrastructure. New residential homes would be serviced by wells and septic or community based systems.”

There is ample scientific evidence to show that groundwater resources in Wake County cannot support the kind of growth projected in the plan. It is obvious that the proposed surface water supplies and infrastructure are contemplated—not to provide safer drinking water than private wells and better wastewater management than septic systems—but to allow Raleigh and other eastern Wake County communities to achieve their goals for growth—high rates of growth that could not otherwise occur.

Yet, DENR does not challenge the assumption of the communities’ right to grow beyond their resources, regardless of impacts. It does not challenge growth projections, even though the current downturn and its expected protraction surely make the projections questionable. Instead, DENR accepts

a contrived proof of need. This sets a precedent that assumes Raleigh can reach as far as it wants to obtain resources to support growth in the future.

Neither does DENR require Raleigh to consider the geographical scope of the impacts. Allowing Raleigh to focus only on its service area ignores the cumulative impacts of growth on downstream areas. These impacts could well prevent the accomplishment of important state environmental goals, such as restoration of water quality in the Neuse River estuary.

Second, the mitigation measures offered in this plan amount to little more than a compendium of existing programs that comply with minimum requirements of state or federally mandated programs. There is little to suggest that Raleigh or any of its merger partners are making an exceptional commitment to mitigate the impacts of their growth.

Notably, stormwater control programs cited as mitigation measures have already been shown to be of limited effectiveness. Many cities and states are now recognizing that stormwater control programs relying mostly on structural BMPs are less effective at reducing both peak flow and pollutants than programs integrating non-structural approaches. While Raleigh's SCI plan pays lip service to low-impact approaches, these approaches have not been significantly integrated into stormwater ordinances and construction requirements for any of the merger partners.

In addition, little consideration is given to controlling stormwater from existing development.

According to the SCI Management Plan, (Table 5-4) with projected growth, the number of square miles of imperviousness in the study area will increase by 44%, with 36% of the 427 square-mile study area being covered by impervious surfaces. With increased imperviousness, there will be increased peak flow damage to streams and increased nutrient loading to tributaries to the Neuse River and the impaired estuary…UNLESS significant efforts are taken to deal with stormwater from existing areas.

Moreover, water conservation measures cited in the study are largely in place to deal with drought emergencies. Only a few tentative measures to bring about efficient use of existing water resources are in place. The plan should commit to a much stronger conservation program, including adoption of a business model that does not rely on high rates of water use for revenue, adoption of conservation rates (which are noted only as "potential" in the plan), revised building and landscaping codes, retrofit programs, and use of captured rainwater. It is arrogant and wasteful to consider destroying a high quality ecosystem like the Little River watershed while we are still squandering our existing water supply.

The environment of Wake County has already been seriously degraded by growth. Wherever development has occurred, streams have filled with sediment from construction and been severely eroded by high volumes of stormwater. Increased imperviousness has not only generated increased runoff but has also decreased groundwater recharge and thereby stream baseflow. Raleigh's SCI management plan proposes to continue pretty much the same development controls that have brought about this degradation.

It is not acceptable to encourage high rates of growth without extraordinary efforts to prevent the spread and worsening of the degradation. This plan does not demonstrate a commitment to extraordinary mitigation measures. It should go back to the drawing board.

Jeri Gray
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Raleigh NC 27607
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WakeUP WAKE COUNTY

P.O. Box 6484 Raleigh, NC 27628

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To:	Kenneth Waldroup - Assistant Director, Raleigh Public Utilities Department
From:	WakeUP Wake County -- Karen Rindge, Executive Director; krindge@earthlink.net 919-828-3833
Re:	Public Comment on Draft Secondary and Cumulative Impacts Management Plan
Date:	August 18, 2009

Thank you for the opportunity to comment on behalf of WakeUP Wake County on the draft Secondary and Cumulative Impacts Management Plan for growth-related infrastructure projects.

WakeUP Wake County, a non-profit organization of Wake citizens deeply concerned about growth, commends Raleigh's Public Utilities, the other municipalities, Wake County, and the Department of Environment and Natural Resources for considering the potential secondary and cumulative impacts of water and sewer infrastructure projects and the mitigation measures in place to address them. Given the growth projected for the service area in the next two decades, the City must be able to provide the water and transportation infrastructure to accommodate that growth while minimizing impacts to water and air quality, open space and wildlife habitat.

Given that current population growth projections and Raleigh's water supply plan demonstrate that water demand will exceed supply in just 30 years; given that increasing infrastructure to keep up with growth's demands will undoubtedly lead to serious impacts on water quality, wildlife habitat and the natural environment; and given that Wake County's reservoirs are already seriously impaired, Raleigh is at a very important crossroads. Either we plan for growth well, or we continue on the current path which has led to degraded water quality and would lead to eventually running out of water. Maintaining both adequate water resources and protecting the environment are vital to our economic well-being, because they are fundamental to business and, the greater the destruction to the habitat and water supplies, the greater the long-term costs to taxpayers.

Rapid population growth and unique geologic conditions in Wake County are creating dire circumstances that necessitate new ways of thinking about our water in order to sustain our economy and environment**. Raleigh should be the LEADER in implementing strategies and policies** that increase water efficiency, consider stormwater and reclaimed wastewater as water resources, protect existing and proposed water supplies, and maintain existing water infrastructure. Water efficiency and creative uses for stormwater and wastewater could be the largest "new" sources of water in Wake County.

University of North Carolina and Duke University authors of the North Carolina Water Allocation Study recently informed the Wake Board of Commissioners that our region could be the first metro region on the East Coast to run out of water – if Atlanta is not first. This should be a major wakeup call to Raleigh.

Recommendations for action in SCI plan:

Water budget needed for this region.

A water budget should be created for this area of Eastern Wake County, to assess total water resources, including groundwater and recharge rates. There is strong evidence (from NC State scientist, Dr. Charles Welby, and a Wake County groundwater study) that groundwater resources in Wake County cannot support the unincorporated population growth projected in the SCI plan and may only support one dwelling unit per acre. Already, many private wells are running dry.

A water budget should also determine how much water supply is needed if water conservation and efficiency measures are fully undertaken. According to a 2008 American Rivers study ("Hidden Reservoirs") on the amount of water that could be saved by our public utility area by using aggressive conservation measures, we could be saving between 12.2 and 18.97 million gallons/day –. This would exceed the 11 million gallons/day that the Little River reservoir is projected to supply, according to U.S. Fish and Wildlife. These calculations were based on DENR's average water use numbers. This would be achieved through conservation pricing, plumbing retrofits, leakage prevention and landscaping changes.

Make Water Efficiency and Conservation the first priorities to minimize impacts.

WakeUP Wake County strongly recommends that Raleigh's Public Utilities move forward with additional measures to limit the need for developing future water supply resources, and hence dramatically reduce the secondary and cumulative impacts. We have significant untapped resources in stormwater and wastewater, and the potential to decrease demand through water efficiency and conservation. We would like to see greater emphasis on using these methods – water efficiency, conservation, capture, and reuse – to meet demand before taking the step of damming the Little River. Therefore, WakeUP recommends that water efficiency and protection, and restoration of existing water supplies, be considered as first alternatives to the proposed Little River reservoir.

Use Existing Water Resources Efficiently.

Raleigh and its partners project a demand for 103 million gallons per day for a population of 896,200 in 2040. WakeUP believes that implementation of effective water efficiency and conservation programs will help families, businesses and institutions use considerably less than 100 gallons per person per day by 2040.

Water audits consistent with the standards adopted by the American Water Works Association can help municipalities identify unaccounted for water, non-revenue water, and cost effective measures to increase water efficiency. Audits should be performed for town, city, and county buildings and facilities, and for facilities of the largest consumers. Operation and maintenance plans and capital improvement plans should be developed to replace depreciated assets, leaky pipes, and old, inefficient pumps. Lost water is wasted water and wasted revenue. We commend Raleigh for its work in this area.

Wake County, Raleigh and the towns in eastern Wake should evaluate the potential for water efficiency, set water efficiency goals, adopt a water efficiency plan, and ensure adequate funds are appropriated to implement the plan.

Conservation or tiered water pricing structures should be used to encourage industries, institutions, businesses and citizens to value and conserve water. **We applaud Raleigh for**

moving forward with tiered rates, and we suggest that the pricing be even more aggressive at the upper levels to discourage water use for lawn irrigation.

We recommend stronger steps to educate customers about the value of water and to assist them in water conservation such as implementing a water conservation education program, providing technical and/or financial assistance to improve water efficiency, and offering a leak detection program. **For existing development, incentives should be provided to homeowners, landlords or renters, businesses, and institutions to retrofit existing buildings with water efficient fixtures and appliances. The new fund for upgrading toilets is an excellent step.** For new development, incentives should be provided for water-efficient practices and installations, including more efficient irrigation systems and more suitable landscapes that eliminate the need for irrigation.

As the Raleigh City Council considers a new water rate structure, it should consider whether new water rates will adequately fund operations and maintenance, water efficiency, and watershed protection programs in addition to paying to provide new infrastructure for growth. WakeUP believes operations and maintenance, water efficiency, and protection of existing water supplies should be a higher priority than subsidizing growth and that other revenue sources, such as availability, capacity, and impact fees, should pay for growth instead of existing customers.

WakeUP believes that investments in water efficiency will be much more cost effective than the more than $250 million (current) cost of the Little River project. We ask the City of Raleigh to quantify the potable water supply available through increased conservation, efficiency, rainwater harvesting, and reuse, and the cost of the actions needed to acquire this resource, and to weigh that against the cost of the Little River Reservoir project, including acquiring the land, relocating roads and utilities, constructing the dam, building the drinking water treatment plant, and mitigating the impacts.

Increase the Use of Stormwater and Wastewater Resources.
Collection and treatment of stormwater reduces flooding, reduces stream erosion, protects water quality, and protects property, and so reduces the impacts. Stormwater can also be a source of water for non-potable purposes such as irrigation and cooling. **We ask the affected governments to revise their stormwater ordinances and policies to increase collection, infiltration, and reuse of stormwater. Further, we recommend they provide incentives to increase stormwater collection and reuse in rain barrels, cisterns, rain gardens, bioretention (landscaping features adapted to treat stormwater runoff on-site), and other practices.** Particularly as the City of Raleigh develops its comprehensive plan, measures should be considered now to improve stormwater management and to encourage collection and reuse of rainwater and stormwater. Public education should be an important part of this plan. Proactive implementation of stormwater capture and reuse systems will help us grow more sustainably and limit demand on current and future water supplies.

Like stormwater, highly treated wastewater or reclaimed wastewater can be used for non-potable drinking water purposes such as irrigation, cooling, and industrial processing. WakeUP asks the affected governments to evaluate the potential to increase use of reclaimed wastewater, particularly on-site re-use.

Increasing water conservation and efficiency, and taking advantage of stormwater and wastewater resources, are steps that should be taken now to help reduce the secondary and cumulative impacts of population growth and infrastructure development, which may also reduce the need for infrastructure development. WakeUP encourages the City of Raleigh to implement these actions and others before proceeding with plans for the Little River Reservoir.

SCI Plan specific comments:

Mitigation measures should be stronger and enforceable.

WakeUP is concerned that the SCI plan outlines mitigation strategies in place to address impacts of infrastructure projects, yet there is *no quantitative analysis to determine if mitigation will reduce impacts to a needed level.* Also, the mitigation programs in the SCI plan are non-committal. Most mitigation programs are comprehensive plan-based, and so they don't have teeth. The SCI plan includes a good inventory of problems, but recommendations are not strong enough and fail to go beyond the status quo in many instances. The impairment of Wake creeks (noted in the plan) and lakes, and current problems of sediment and nutrient overloading in water bodies, demonstrate that even modern development standards and current stormwater controls are not sufficient to protect surface waters. Raleigh's City Council will be considering recommendations for stronger stormwater controls, and we look forward to changes.

We commend the towns of Wendell and Rolesville for their recent adoption of strong stormwater control programs for new development. These programs, to be administered by Wake County, will probably be the strongest in the county, and we encourage other municipalities to follow their lead. These programs require using low impact development practices before a developer can buy mitigation credits. **But these programs will only be successful with meaningful, financed enforcement – which continues to be a challenge to all municipalities.**

Mitigation credits should be a last resort.

Eventually, we will run out of places to do mitigation, plus mitigation does not promote on-site capture and reuse of water. We must look at all our water as a resource and begin bolder steps to capture stormwater for on-site use. No net impervious surface impact should be the goal. The plan should establish a public/private sector task force to assess what incentives are needed to encourage stormwater reuse and what building code changes are needed to expedite developments that conduct appropriate pre-development hydrological studies. Practices need to be effective; building codes need to include low impact design (LID) that mimic approximately 95 percent pre-development hydrology (assessing flow, recharge). Municipal staff should be well-versed with pre-development hydrology or LID practices and goals, and should help approve good plans for developers with quality stormwater control and appropriate landscape plans.

Impervious surface percentages too high.

According to table 5-4 of the SCI Management Plan, which shows with projected population growth and construction of Little River Reservoir and infrastructure, imperviousness in the study area will increase from 427.8 to 1551 square miles, or 44%. The impact on streams, already under stress, will be very serious. Studies indicate that stormwater controls relied upon under NPDES Phase II and the Neuse River Rules may reduce nutrient loading, but they do not prevent increases in nutrient loading to streams as a result of increased impervious surfaces. Yet the plan does not recommend fundamental changes to reduce nutrients.

Impervious surface permitted under the SCI plan in the primary watershed protection area is too high, unless effective clustering occurs. Up to 24% impervious surface permits about one house per quarter acre. The Center for Watershed Protection and U.S. EPA have determined that impervious surface of more than 10% will lead to stream degradation and negative water quality impacts. Even 30% imperviousness in secondary watersheds, with controls for up to a one-inch storm, only reduces part of the runoff impact. We can have growth and development (and some impervious surface), but we need to make changes in how we handle the

stormwater. A “no net impervious surface” policy would still allow impervious surface to be created.

Groundwater recharge needs to be addressed.

The SCI plan does not address recharging needs for wells. Recharging plans should be part of on-site stormwater capture plans. Re-charge areas should be determined and density should be reduced in those areas.

Climate change effects should be considered in SCI plan.

Raleigh Public Utilities needs to evaluate the risk to our water supply from climate change. The plan describes impacts using current conditions, not the future conditions due to climate change. For example, permitting 50% of floodplain to be developed does not account for the impacts of climate change. Because the nature of climate change effects is highly uncertain, public utilities must build resiliency into infrastructure, again utilizing stormwater, on-site capture and conservation. In addition, the plan does not appear to take into consideration the double impacts on natural habitats of climate change and increased development. This ought to be factored in as well.

Thank you for your consideration.

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August 21, 2009

Ruth Swanek
CH2M Hill
ruth.swanek@ch2m.com

Re: Draft Secondary and Cumulative Impacts Management Plan

Dear Ruth,

Thank you for the opportunity to provide comments on the Proposed Secondary and Cumulative Impacts Management Plan (SCI) on behalf of the Neuse RIVERKEEPER® Foundation and American Rivers. We appreciate the great amount of time and effort that have gone into the development of this document thus far, and feel that the intent of the SCI is well worthwhile. However, a number of concerns and opportunities for improvement remain and must be addressed in order for the plan to be as efficacious as possible and to ensure protection of our vital water resources.

Founded in 1980, the **Neuse RIVERKEEPER® Foundation** protects, restores and preserves the Neuse River basin through education, advocacy and enforcement, in order to provide clean water for drinking, recreation and enjoyment to the communities that it serves.

American Rivers protects and restores America's rivers for the benefit of people, wildlife, and nature. Founded in 1973, American Rivers has more than 65,000 members and supporters, with offices in Washington, DC and nationwide.

We would like to point out one technical correction before moving to more substantive comments. There are a number of occasions, starting in Table 1-A which read: "No new or re-development may not contribute more than 3.6 lbs of Nitrogen per acre per year…" Given our understanding of the rule upon which this is based, we believe this should read "No new or re-development may ~~not~~ contribute more than 3.6 lbs of Nitrogen per acre per year…" Please let us know if this is not a technical error, but an intentional change of policy, as we will need to address this immediately.

<u>Expand scope of the analysis to include Little River Reservoir and Little Creek WWTP</u>

Despite the fact that the Little River Reservoir and Little Creek Wastewater Treatment Plant (WWTP) projects will be addressed through separate NEPA/SEPA processes, it is still concerning to us that the SCI does not take the associated impacts into consideration. Given the enormous physical scale and future growth impacts of these projects it is

almost impossible that potential impacts will not be missed by failing to include them in a document analyzing public infrastructure for which these projects are a significant basis. In order to have a full picture of the impacts related to public infrastructure in the study area, these projects needs to be incorporated into the analysis to the greatest extent possible.

Consider and Prepare for Climate Change

North Carolina's environment, public health and economy are likely to experience significant adverse effects as a result of global warming. Over the next century, the average temperature of N.C. is expected to increase 4-10°F, with approximately 800 square miles of the North Carolina coast by the expected sea level rise of 19 inches by 2100.

North Carolina can expect to experience the following effects:

- *Rising seas will significantly impact North Carolina's coast.*
- *Warmer temperatures may worsen North Carolina's air quality.*
- *Increased temperatures are expected to lead to health problems.*
- *North Carolina's natural environment will be altered.*
- *Global warming will significantly affect North Carolina's economy.*

(Environmental Defense Fund, Understanding Global Warming for North Carolina.)

It would be of great benefit to take into consideration the role that climate change will play in altering the availability of resources and options when identifying potential impacts and mitigation. Much of this plan addresses potential impacts to wetlands, floodplains, and surface waters, but the threats to (and value of) those resources may be significantly different when you take into consideration the changes in weather and rise in water levels that are expected over the next century, with noticeable changes expected in the next 10-25 years. Climate experts in North Carolina (Duke, EPA, EDF) have begun to evaluate the challenges of protecting water quality under a predicted weather regime where droughts, as well as floods, are more common place. **Concerns have been raised regarding the spread of illnesses from water supplies contaminated by increased flooding and of lower flows and higher water temperatures which could degrade water quality by concentrating pollutant levels and reducing the assimilation of wastes.**

In recognition of the reality that climate change *is already* happening the State of California has recently drafted a "Climate Adaptation Strategy" which evaluates the latest science on how climate change could impact the state, and provides recommendations on how to manage against those threats. The SCI is a perfect opportunity to identify and plan for the cumulative impacts of infrastructure and climate shift to our human and natural communities, as each will unquestionably impact our ability to provide for future citizens of the area.

Increase emphasis on the protection of groundwater recharge

According to the SCI, an estimated 6-19% of rainfall in Wake County goes to recharge our underground network of wells and streams. At Wake County's average of 44.7 inches per year and a study area of 428 sq mi, a minimal recharge rate of 10% provides 33,250 million gallons/year of recharge to groundwater which provides potable water for study area residents and baseflow for our streams (35-55% of stream baseflow during normal years).

Wake Forest and Rolesville already attempt to maintain groundwater recharge areas through their Zoning Ordinance, but the groundwater protection/mitigation efforts discussed for the City of Raleigh and Wendell focus primarily on quality issues (SCI, 6.1.16). The impact of the impervious surfaces associated with the growth related to public infrastructure extension on recharge rates in the entire study area – particularly in high recharge areas – must be taken into account in order to truly understand the SCI of growth and development.

As part of the June 2003 Wake County Comprehensive Groundwater Investigation Report, DENR provided a recommendation to perform a study assessing the impacts of groundwater and surface water from dense rural development. Particularly given the fact that many of the mitigation measures in this plan rely upon reducing development densities to reduce environmental impacts—which means a large portion of the study area will continue to rely upon groundwater resources as their primary source of potable water—we believe that **greater investigation and discussion of the impacts of growth and development upon groundwater recharge should be considered as part of the SCI.**

Increase water quality and quantity protection in jurisdictions with less stringent rules

Over the last few months, the City of Raleigh, Wake County and other downstream communities have worked tirelessly to protect Falls Lake; the Water Supply on which much of the proposed infrastructure in this plan relies. The quality of upstream development has been identified as one of the main sources of problems, and as Rule Development moves forward it would behoove those of us who drink from upstream to lead by example. Each of the merger communities has an area or two where they can stand up and say they have the best policies and ordinances out there, but there are others where important policies lag behind other localities.

Floodplain mitigation programs identified in the SCI include the Town of Wake Forest which does not allow any development within the 500-year floodplain or future 100-year-floodplan, as well as in the 100-year-floodplain, with required 100 foot wide buffers in the Little River Watershed. Rolesville does not allow development in floodway or non-encroachment areas of 100-year floodplain and no floodplain development is allowed in WSWs. In addition, Wendell and Rolesville have recently adopted stormwater ordinances that do not allow Nitrogen buy-downs unless a site has already met certain LID requirements.

The importance of having strong, uniform measures cannot be overestimated. A developer considering two pieces of land, all else the same, will select the one in the jurisdiction with less stringent environmental regulations due to the decreased expense of compliance. However, the properties on two different sides of a jurisdictional line still use the same streams, same roads, and in this instance will rely upon the same utility provider. Discrepancies between the stringency of one merger community over another may cause development to favor one over the other, to the long term detriment of the selected locality. Efforts should be undertaken to increase water quality and quantity in merger communities with less stringent rules in order to improve uniformity across the service area.

In addition, as the State Capital and major public utilities provider, we would love to see the City of Raleigh step up to be the uncontested leaders in regional stormwater management; to take a look at

what else is out there and make sure they have equal—if not more stringent standards—than every other local jurisdiction, part of this merger agreement or not.

Provide additional measures to reduce impervious surfaces and their impacts

Traditional Zoning and Planning and Development Ordinances which "limit impervious surface in Reservoir Watershed Protection Overlay Districts" are not stringent enough to rely upon as avoidance and mitigation measures for surface water impacts.

> *Stream research generally indicates that at about 10% impervious cover, where sensitive stream elements are lost from the system. A second threshold appears to exist at around 25 to 30% impervious cover, where most indicators of stream quality consistently shift to a poor condition* (The Impervious Cover Model, Center for Watershed Protection).

The SCI estimates build-out impervious cover of 36% with some watersheds subjected to having nearly half of their overall acreage covered in recharge-preventing, runoff-promoting impervious surface. We would love to see the City of Raleigh—and all of the merger communities—to take an aggressive stand against all unnecessary impervious cover associated with future growth and public infrastructure by adopting a "No Net Impervious Surface Policy" which works to support innovative and green development while protecting our clean water and healthy communities. More importantly, **the adoption of policies and/or regulations which require development to mimic 95% of a site's pre-development hydrology will work to mitigate the effects of continuing to increase impervious cover within the study area.**

While efforts to reduce impervious surface on individual sites are noble and necessary, there are also opportunities to aggressively encourage development that concentrates impervious surface for the benefit of protecting a larger contiguous open area. Progressive planning efforts should also play a role in working to reduce the overall impervious burden our surface and groundwater resources must bear. A large portion of this estimate is "future residential use (61 percent) [which] will be the predominant land use within the Study Area" with an average of 19% impervious surface and a majority of which "will be classified as low density or very low density (88 percent)" (SCI, 5-8). Low density development in this area ranges from about 1-6 du/ac; densities which are considered sprawl by most and will not effectively support the most basic forms of public transportation. The single family homes and estate lots which are the result of development in this range are impervious surface intensive without providing any of the air or water quality benefits associated with well planned urban and conservation development.

Planning mechanisms such as clustering, pervious hardscapes, and transferable development units can help to reduce impervious area while avoiding the sprawl and excess pavement that is commonly associated with low density development. We recognize that steps have already been taken to encourage this form of development in some communities, but want to be very clear that the development which we implement today will determine our habits and needs for the foreseeable future. **We would like to see the merger communities work together to create a mechanism for allowing development rights to be "moved" from low- or very-low-density areas within the USA to areas of higher intensity (increased clustering, allow transfer between different parcels) in order to reduce sprawl and increase the efficiency of providing public utilities.** True open space which is separate and distinguished from urban areas is much more environmentally and publicly beneficial

than masses of low-density housing that still comes in at almost ¼ impervious cover when you account for the associated "Transportation" land use.

To incentivize the use of such a program, we suggest that moved development rights be viewed as "bonus density" which would allow development densities greater than current zoning, provided they obtained the extra units from areas with the lowest densities planned for water/sewer (defined/adopted map) and they maintained the same or less impervious surface footprint which would have been required of the property with the standard density allotment.

Ensure planning and development mitigation measures result in real action

We applaud the planning efforts of all the merger communities in the recent past and greatly appreciate the level of public input that has been involved. These documents are incredibly useful to help crystallize the vision of our future communities, but we cannot stress enough the importance of codifying any measures that will be relied upon in the long-term. Growth Management Plans, Comprehensive Plans, Open Space Plans, and Community Plans are just that: plans, and many plans do not come to fruition. These are not legal documents for the purposes of enforcement and may change as staff and elected officials come and go. In a document that is designed to replace some of the work required by EAs and EISs under SEPA and NEPA *planned* measures are not good enough. **We strongly encourage you to aggressively pursue codification of any measure referenced within the SCI that you plan to rely upon for mitigation** in order to prevent future challenges to the sufficiency of this analysis.

Finally, we encourage the staff of each merger community to seriously evaluate Planned Unit, Conservation, and other similar ordinances for effectiveness and conflict with existing land development codes. These ordinances have the potential to benefit both development and the environment but are difficult to rectify with many existing codes and therefore are often less successful than initially imagined. It is important that these ordinances are designed in a manner that successfully protects the environment by "minimizing built-upon/disturbed areas," while remaining functional enough that the development community has an interest in their creation.

Please don't hesitate to contact either of us should you have any questions regarding our comments; we look forward to seeing the final document!

Sincerely,

Alissa Bierma
Upper Neuse RIVERKEEPER®
Neuse RIVERKEEPER® Foundation

Peter Raabe
NC Conservation Director
American Rivers

North Carolina Department of Cultural Resources

State Historic Preservation Office

Peter B. Sandbeck, Administrator

Beverly Eaves Perdue, Governor
Linda A. Carlisle, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

August 21, 2009

Ruth Swanek
CH2M HILL
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Raleigh, NC 27604

Re: City of Raleigh Secondary and Cumulative Impacts Management Plan For Public Utilities Infrastructure, Wake County, GS 09-1637

Dear Ms. Swanek:

We have reviewed the above cited document and offer the following comments.

In the past we have reviewed secondary and cumulative impact management plans submitted for other Wake County municipalities. When we have recommended that an adequate assessment of secondary and cumulative effects on archaeological resources will need to include the development of a predictive model to pinpoint areas likely to contain archaeological resources, we have been informed that such an undertaking would be "beyond the scope of the document." As the current document states on page 5-19 that indirect impacts are unlikely to affect historical and archaeological resources, we assume that our recommendation for such a model will meet a similar fate.

However, there are several errors of fact in the document that should be corrected.

Page 4-20: Due to the fact that archaeological site locations are not public information because of risk of harm from looting, neither the National Register of Historic Places website nor the NCOneMap are viable sources of information regarding significant archaeological resources. There are over 1750 recorded archaeological sites in Wake County. Information regarding these resources may be obtained from the Office of State Archaeology.

Table 4-11 is a list of resources in the National Register of Historic Places, but none of these are listed due to their archaeological significance.

Page 4-24: The "comprehensive architectural survey of Wake County" identified architectural resources, not archaeological resources. No comprehensive archaeological survey of Wake County has been conducted.

Page 6-7: The North Carolina Archaeological Resources Protection Act applies only to state lands, not private property as stated.

Secondary and cumulative impacts resulting from the provision of public utilities are more likely to affect archaeological sites than historic structures and buildings as they are not readily visible. For the same reason, local plans and ordinances cited in your document as providing protection and consideration of historic resources focus primarily on buildings and landscapes rather than archaeological resources.

We would also note that the plan tends to be too general and to assume a level of familiarity with historic preservation issues that may not be present among a majority of the public. It fails to identify and explain several of the basic terms and processes involved in historic resource identification and preservation, including:

- Defining what it means to be a Certified Local Government (CLG) and how this could be factored into the planning process;
- Defining the role of the Historic Preservation Commission (HPC); and
- Outlining the role of the City's staff in historic preservation efforts beyond the locally designated historic properties.

These comments are made in accord with G.S. 121-12(a) and Executive Order XVI. If you have questions concerning them, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/807-6579. In all future communication concerning this project, please cite the above-referenced tracking number.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/807-6579. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Renee Gledhill-Earley

Peter Sandbeck

cc: Clearinghouse

Responses to Oral and Written Comments

Summary of Comments on City of Raleigh SCI Management Plan

This document includes a summary of the written and oral comments received on the draft City of Raleigh Secondary and Cumulative Impacts Management Plan: Including the Communities of Garner, Knightdale, Rolesville, Wake Forest, Wendell, and Zebulon dated June 2009. The oral comments were made during the public meeting held on Monday August 17, 2009 at the City of Raleigh's Neuse River WWTP. Written comments were received until Friday August 21, 2009.

A summary of the comments are provided below; responses are provided in italics.

Written and Oral Comments

Mayor Matheny
Town of Zebulon

<u>Town of Zebulon balances growth and the environment.</u>
Zebulon participated in the SCI process and is actively taking measures to protect the environment while allowing the Town to grow. Zebulon currently has 5 subdivisions under consideration, 4 of which are conservation subdivisions. 140 out of 620 acres are open space. There are 100 foot buffers on perennial streams and 50 foot buffers on intermittent streams. There are 7 parks for 5,000 people, offering a mixture of passive and active recreation. Zebulon has been an active proponent for Little River Reservoir since the 1970s and has adopted the Interlocal Agreement, agreeing to give up substantial acres to development by not annexing or extending water and sewer lines into it. Zebulon has not yet adopted a stormwater ordinance, but will adopt it soon pending further examination.
Comments noted.

Councilman Russ Stephenson
City of Raleigh

<u>Sustainability important to City of Raleigh.</u>
Councilman attended meeting to learn more about the SCI process. He has concerns regarding sustainability. In the past, there was cheap land, but that paradigm is shifting. Energy, land and construction costs are increasing, and Raleigh needs to stay healthy and be competitive with other cities. He was here to learn about the Plan and learn how Raleigh can use water more efficiently. He noted that average water consumption has been 40 mgd, but that goes to 70 mgd in the summer. City and merger communities need to be efficient using water in the summer.
Comments noted. The City has a conservation program which is outlined in Section 8 of the SCI Management Plan.

David Bone
Town of Wendell

<u>Town of Wendell supports Plan.</u>
The Town of Wendell supports this Plan which is a comprehensive approach to allow evaluation of secondary and cumulative impacts of planned water and sewer infrastructure

on front end. Wendell has developed a comprehensive plan, establishing a framework for development in land use, transportation and economic development over the next 20 years. Wendell partners with Wake County for erosion and sediment control. Wendell is working with other communities to develop a new stormwater ordinance, and working on an Interlocal Agreement for enforcement. Wendell has been working on a comprehensive Unified Development Ordinance which also complements this work. The Town of Wendell and Zebulon have developed a joint Open Space and Greenway Master Plan, and is looking at partnering with Knightdale. The Town of Wendell recently completed its Park Master Plan and committed to protecting mussels in Little River Reservoir. Commends the state of North Carolina for allowing such dialogue with City of Raleigh and commends the City of Raleigh for pursuing this draft Plan.
Comments noted.

Jeri Gray
Private Citizen

<u>Plan should demonstrate commitment to environment.</u>
Plan should demonstrate an exceptional commitment to protect stream quality, ground water quality, air quality, land resources and quality of life.
The purpose of the SCI Management Plan is to document the proposed water and wastewater infrastructure, potential SCI, and programs that address those impacts in order to meet environmental documentation requirements for the North Carolina Environmental Policy Act. This process enables the state agencies and the public to evaluate the long range plans of the City throughout its service area. Many of the programs the City of Raleigh and its merger partners implement are above the minimum requirements of State and Federal programs. A variety of ordinances and policies protect the area's natural resources and quality of life for each municipality's citizens.

<u>Need for infrastructure and sufficiency of mitigation.</u>
This management plan does not demonstrate that the planned infrastructure is necessary or that the mitigation sufficient. The Memorandum of Agreement between the N.C. Department of Environment and Natural Resources (DENR) that allows for this comprehensive SCI plan does not hold Raleigh and its partners to a high enough standard of proof and commitment.
This SCI Management Plan is based on the City's utility Capital Improvement Program (CIP) and the potential impacts of that plan. Justification for specific infrastructure, such as the required capacity of a water transmission line or sewer interceptor, is appropriately addressed in the individual environmental documents for those projects and/or through the permitting processes. This Plan provides

the agencies and public an opportunity to review the entire planned infrastructure within the Study Area rather than on a piece-meal basis through individual environmental documents. As such, the Plan provides a high level review of the need for the proposed infrastructure in Section 3. The City integrates its utility CIP plan with other planning processes to ensure it can deliver services to its citizens. Many measures are currently in place to limit SCI as growth occurs in the Study Area. Ordinances protect open space, water supply watersheds, stream buffers, floodplains, wetlands and require stormwater controls to limit water resources impacts. The SCI Management Plan is intended to address the impacts from the majority of projects that would fall under the North Carolina Environmental Policy Act. The Memorandum of Agreement (MOA) states that the SCI Management Plan does not limit DENR's permitting authority; DENR may include additional mitigation measures in its permits if it believes that the current ordinances and policies would not protect environmental resources from impacts resulting from that project.

<u>DENR should take holistic view.</u>
Raleigh has taken a "holistic view" of growth-related impacts but DENR has not taken a holistic view by requiring Raleigh and its partners to show that the massive infrastructure expansion is necessary and examine alternatives to the expansion.
For a given infrastructure project, the purpose and need for the project and the alternatives will be described within that project's environmental documents which will include the "no action" alternative. It may also include alternatives to expansion such as conservation. Each environmental document will also need to include any updated population and infrastructure demand projections for the project's service area.

<u>Growth rates could not occur without infrastructure.</u>
The SCI Plan claims that anticipated growth would occur with or without the planned infrastructure. There is ample scientific evidence to show that groundwater resources in Wake County cannot support the kind of growth projected in the plan. It is obvious that the proposed surface water supplies and infrastructure are contemplated—not to provide safer drinking water than private wells and better wastewater management than septic systems—but to allow Raleigh and other eastern Wake County communities to achieve their goals for growth—high rates of growth that could not otherwise occur.
The SCI Plan acknowledges that growth would likely be less dense without infrastructure, but that growth would occur (see page 5-1) and that new residential homes would be serviced by wells and septic

or community based systems. The Triangle Area is growing, and it is the City of Raleigh's Public Utility Department's commitment to provide safe and reliable water and wastewater service to meet the needs of its residents and the residents of the merger communities. The City and the merger communities do wish to grow to provide economic vitality in their jurisdictions. The SCI Management Plan and the ordinances, policies and other plans developed by the local governments serve to balance the competing goals of growth and environmental protection.

<u>DENR does not challenge growth.</u>
Yet, DENR does not challenge the assumption of the communities' right to grow beyond their resources, regardless of impacts. It does not challenge growth projections, even though the current downturn and its expected protraction surely make the projections questionable. Neither does DENR require Raleigh to consider the geographical scope of the impacts. Allowing Raleigh to focus only on its service area ignores the cumulative impacts of growth on downstream areas.
DENR has the authority to issue or deny permits for given projects in order to protect environmental resources in accordance with applicable federal and state laws. The SCI Plan is following an EIS format and thus includes a comprehensive discussion of environmental impacts and the programs in place to mitigate those impacts. The MOA fully acknowledges DENR's permitting authority and their ability to include permit conditions that are necessary to protect the environment. The document examines the Study Area which includes the planning areas which in general are larger areas than typically covered for a given infrastructure project within a given environmental document. Secondary and cumulative impacts could extend beyond the Study Area, particularly with regard to downstream water resources. Individual environmental documents will address these impacts as needed. For example, the proposed Little River Reservoir EIS will evaluate impacts on downstream reaches of the Little River in Johnston County. Section 1 of the SCI Management Plan acknowledges that cumulative direct impacts will be addressed in individual EAs or EISs.

<u>Mitigation measures are compendium of State and Federal programs.</u>
Second, the mitigation measures offered in this plan amount to little more than a compendium of existing programs that comply with minimum requirements of State or Federally mandated programs. There is little to suggest that Raleigh or any of its merger partners are making an exceptional commitment to mitigate the impacts of their growth.

An exceptional commitment to mitigate impacts of growth is not a requirement of the Plan. The Plan serves to document the planned infrastructure, the impacts of the growth that infrastructure supports on the environment, and programs which address those impacts. However, the City and its merger communities are committed to balancing the growth and protecting the environment. Many of the programs the City of Raleigh and its merger partners implement are above the minimum requirements of State and Federal programs. For example, many of the riparian buffer requirements and floodplain protection ordinances are more protective than those required by state and federal programs. Table 6-1 summarizes state and federal programs; Tables ES-1 and 15-1 summarize local programs. The holistic efforts for the protection of the environment are being implemented through a variety of ordinances and policies. The measures protect the area's natural resources including open space, water supply watersheds, stream buffers, floodplains and wetlands.

<u>LID approaches should be integrated into stormwater programs.</u>

Notably, stormwater control programs cited as mitigation measures have already been shown to be of limited effectiveness. Many cities and states are now recognizing that stormwater control programs relying mostly on structural BMPs are less effective at reducing both peak flow and pollutants than programs integrating non-structural approaches. While Raleigh's SCI Plan pays lip service to low-impact approaches, these approaches have not been significantly integrated into stormwater ordinances and construction requirements for any of the merger partners.

The communities follow State guidelines and rules for approved stormwater BMPs which limit the utility of low-impact approaches. As these regulations change, the communities will evaluate their programs. For example, DWQ has indicated that cisterns must be drained within 2 to 5 days of a rainfall event which is in accordance with the 15A 2H.1000 regulations. The 2009 General Assembly passed legislation in HB 749 which authorizes the use of cisterns for flushing toilets and outdoor irrigation. HB 749 also prevents state, county or local building codes or regulations from prohibiting the use of cisterns for these purposes. Additionally, the state requires maintenance programs for BMPs that are not realistic to impose on LID where many small BMPs are used to retain and treat stormwater in small catchments. The municipalities are taking active roles in the planning process to provide incentives for low-impact approaches; conservation subdivisions are one example of this. The City of Raleigh has a LID pamphlet and presentation for developer and public education purposes. The City is currently drafting a Low-Impact Development manual to promote these

techniques. The City of Raleigh also has an active rain barrel program.

<u>Stormwater from existing development should be addressed.</u>
In addition, little consideration is given to controlling stormwater from existing development.
The municipalities are pursuing grant funds for the installation of stormwater retrofits and will evaluate opportunities for stormwater improvements when areas are redeveloped.

<u>Increased impervious will increase runoff.</u>
According to the SCI Management Plan, (Table 5-4) with projected growth, the number of square miles of imperviousness in the study area will increase by 44%, with 36% of the 427 square-mile study area being covered by impervious surfaces. With increased imperviousness, there will be increased peak flow damage to streams and increased nutrient loading to tributaries to the Neuse River and the impaired estuary…UNLESS significant efforts are taken to deal with stormwater from existing areas.
Table 5-4 summarizes the future impervious surface for the entire study area based on literature values of impervious surface by land use category. This summary table is intended to show that imperviousness and thus stormwater runoff will increase without proper stormwater controls. Each of the local governments has a stormwater ordinance or is in the process of adopting a new stormwater ordinance to address this issue. This table should also be reviewed inside the context of the entire SCI Management Plan. The local governments also use planning techniques to guide growth away from certain locations. For example, the City of Raleigh does not plan on extending water and sewer service into the Little River and Falls Lake water supply watersheds. Thus, these areas were not included in the SCI Management Plan Study Area, and the levels of impervious shown on the Tables in Sections 4-3 and 5-3 are higher than they would be if the entire watershed areas were included in the tables.

<u>Stronger water conservation measures needed.</u>
Moreover, water conservation measures cited in the study are largely in place to deal with drought emergencies. Only a few tentative measures to bring about efficient use of existing water resources are in place. The plan should commit to a much stronger conservation program, including adoption of a business model that does not rely on high rates of water use for revenue, adoption of conservation rates (which are noted only as "potential" in the plan), revised building and landscaping codes, retrofit programs, and use of captured rainwater. It is arrogant and wasteful to consider destroying a

high quality ecosystem like the Little River watershed while we are still squandering our existing water supply.
The SCI Management Plan is intended to evaluate the potential growth-related impacts on environmental resources from all planned water and wastewater infrastructure based on the CIP and current population and utility need projections. The SCI Management Plan is not intended to evaluate conservation programs and the City's budget. Individual environmental documents will include a detailed purpose and need statement for that particular project which includes growth and utility need projections. These documents will also include an alternatives analysis. Conservation measures could be included in either the utility projections or in the alternatives selected to meet the purpose and need. The City has an active conservation program, and conservation measures it has implemented are summarized in Section 8

<u>Wake County environment already degraded.</u>
The environment of Wake County has already been seriously degraded by growth. Wherever development has occurred, streams have filled with sediment from construction and been severely eroded by high volumes of stormwater. Increased imperviousness has not only generated increased runoff but has also decreased groundwater recharge and thereby stream baseflow. Raleigh's SCI management plan proposes to continue pretty much the same development controls that have brought about this degradation.
Many of the streams in the study area that are degraded were developed before current stormwater requirements, riparian buffer rules and other ordinances and policies were in place. New stormwater controls are being implemented, and local governments are developing policies and programs to encourage infiltration practices to maintain groundwater recharge. The local governments are in partnership with the State as it evaluates its stormwater manual, policies, and regulations to remove impediments to practices which encourage infiltration.

<u>Need extraordinary mitigation measures.</u>
It is not acceptable to encourage high rates of growth without extraordinary efforts to prevent the spread and worsening of the degradation. This plan does not demonstrate a commitment to extraordinary mitigation measures. It should go back to the drawing board.
The SCI Plan is meant to provide a comprehensive review of the City's planned utility CIP plans and the associated secondary and cumulative impacts. The commenter's goal of this plan representing an extraordinary commitment is not a requirement for the Plan.

Karen Rindge
WakeUP Wake County

Raleigh at crossroads to plan for growth.

Given that current population growth projections and Raleigh's water supply plan demonstrate that water demand will exceed supply in just 30 years; given that increasing infrastructure to keep up with growth's demands will undoubtedly lead to serious impacts on water quality, wildlife habitat and the natural environment; and given that Wake County's reservoirs are already seriously impaired, Raleigh is at a very important crossroads. Either we plan for growth well, or we continue on the current path which has led to degraded water quality and would lead to eventually running out of water. Maintaining both adequate water resources and protecting the environment are vital to our economic well-being, because they are fundamental to business and, the greater the destruction to the habitat and water supplies, the greater the long-term costs to taxpayers.

The City of Raleigh and the merger communities concur that maintaining adequate water resources and protecting the environment are vital to the area's economic well-being. The local governments are committed to balancing the often conflicting goals of growth and environmental protection. The SCI Management Plan is one step these communities are taking to balance those goals; the Plan provides a comprehensive evaluation of planned growth, needed infrastructure to support that growth, the impacts of that growth on the environment, and practices that minimize those environmental impacts.

Need to think about water sustainably.

Rapid population growth and unique geologic conditions in Wake County are creating dire circumstances that necessitate new ways of thinking about our water in order to sustain our economy and environment.

We concur. Many of these issues are best discussed on a regional scale. While Wake County does not develop infrastructure, the County has provided leadership in pulling its member communities to discuss these important issues. Examples of these regional planning efforts that the City and merger communities participated in include: Wake County Water and Sewer Plan that led to the merger activity; Wake County Growth Management Plan; Wake County Open Space Plan (each local government also has its own Open Space Plan); Wake County Watershed Management Plan; Air Quality Task Force; and Little River Interlocal Agreement.

University of North Carolina and Duke University authors of the North Carolina Water Allocation Study recently informed the Wake Board of Commissioners that our region could be the first metro region on the East Coast to run out of water – if Atlanta is not first. This should be a major wakeup call to Raleigh.
Comment noted.

Water budget needed for this region.
A water budget should be created for this area of Eastern Wake County, to assess total water resources, including groundwater and recharge rates. There is strong evidence (from NC State scientist, Dr. Charles Welby, and a Wake County groundwater study) that groundwater resources in Wake County cannot support the unincorporated population growth projected in the SCI plan and may only support one dwelling unit per acre. Already, many private wells are running dry. A water budget should also determine how much water supply is needed if water conservation and efficiency measures are fully undertaken. According to a 2008 American Rivers study ("Hidden Reservoirs") on the amount of water that could be saved by our public utility area by using aggressive conservation measures, we could be saving between 12.2 and 18.97 million gallons/day. This would exceed the 11 million gallons/day that the Little River reservoir is projected to supply, according to U.S. Fish and Wildlife. These calculations were based on DENR's average water use numbers. This would be achieved through conservation pricing, plumbing retrofits, leakage prevention and landscaping changes.
We agree that a water budget would provide useful information for water resources planning. However, this is beyond the scope of the SCI Management Plan. The purpose of the SCI Management Plan is to meet documentation requirements of the North Carolina Environmental Policy Act in a more effective and efficient manner. A water budget would be a component of a Total Water Management Plan or Integrated Water Resources Management Plan.

Make water efficiency and conservation the first priorities to minimize impacts.
WakeUP Wake County strongly recommends that Raleigh's Public Utilities move forward with additional measures to limit the need for developing future water supply resources, and hence dramatically reduce the secondary and cumulative impacts. We have significant untapped resources in stormwater and wastewater, and the potential to decrease demand through water efficiency and conservation.

There are opportunities to use stormwater and reclaimed water to meet future water supply needs, but the City needs to balance the benefit of helping to meet future needs against the cost of developing that infrastructure. For example, the wastewater treatment plants are located in more rural areas of the service area; thus, there are limited users of reclaimed water in these areas and pumping costs and associated environmental impacts (including greenhouse gas emissions) need to be considered. Future environmental documents for specific infrastructure projects will evaluate the need for the infrastructure as well as alternatives to the proposed infrastructure project. Water efficiency and conservation could be included in either the purpose and need for the project or in the project alternatives.

Use existing water resources efficiently.

Raleigh and its partners project a demand for 103 million gallons per day for a population of 896,200 in 2040. WakeUP believes that implementation of effective water efficiency and conservation programs will help families, businesses and institutions use considerably less than 100 gallons per person per day by 2040.

The City of Raleigh uses the best information available to develop water and wastewater projections for its service area and is committed to providing a high level of service as cost-effectively as possible to its customers. In the future, there may be more efficient fixtures and effective conservation programs that reduce demand. In that case, the City will revise its per capita estimates.

Tiered water pricing should be used.

Conservation or tiered water pricing structures should be used to encourage industries, institutions, businesses and citizens to value and conserve water**. We applaud Raleigh for moving forward with tiered rates, and we suggest that the pricing be even more aggressive at the upper levels to discourage water use for lawn irrigation.** We recommend stronger steps to educate customers about the value of water and to assist them in water conservation such as implementing a water conservation education program, providing technical and/or financial assistance to improve water efficiency, and offering a leak detection program**. For existing development, incentives should be provided to homeowners, landlords or renters, businesses, and institutions to retrofit existing buildings with water efficient fixtures and appliances.** WakeUP believes that investments in water efficiency will be much more cost effective than the more than $250 million (current) cost of the Little River project.

The City does have a water conservation program and water conservation incentives as described in Section 8.8 of the SCI Plan. The City provides water audits free to customers to assist them in

identifying leaks or measures that would help them reduce their water consumption. The City provides low flow showerheads and faucet aerators to distribute to low and moderate income citizens within the merger communities. The City also has a toilet replacement rebate program that will pay customers to replace high water use toilets with efficiency toilets.

Water rates should adequately fund water programs.
As the Raleigh City Council considers a new water rate structure, it should consider whether new water rates will adequately fund operations and maintenance, water efficiency, and watershed protection programs in addition to paying to provide new infrastructure for growth. WakeUP believes operations and maintenance, water efficiency, and protection of existing water supplies should be a higher priority than subsidizing growth.
Comment noted.

Increase the use of stormwater and wastewater resources.
Stormwater can also be a source of water for non-potable purposes such as irrigation and cooling. **We ask the affected governments to revise their stormwater ordinances and policies to increase collection, infiltration, and reuse of stormwater. Further, we recommend they provide incentives to increase stormwater collection and reuse in rain barrels, cisterns, rain gardens, bioretention (landscaping features adapted to treat stormwater runoff on-site), and other practices.**
The communities follow State guidelines and rules for approved stormwater BMPs which limit the utility of low-impact approaches. For example, DWQ has indicated that cisterns must be drained within 2 to 5 days of a rainfall event which is in accordance with the 15A 2H.1000 regulations. Additionally, the state requires maintenance programs for BMPs that are not realistic to impose on LID where many small BMPs are used to retain and treat stormwater in small catchments. The municipalities are taking active roles in the planning process to provide incentives for low-impact approaches; conservation subdivisions are one example of this. The City of Raleigh has a LID pamphlet and presentation for developer and public education purposes. The City is currently drafting a Low-Impact Development manual to promote these techniques. The City does sell rain barrels at less than retail cost.

Highly treated wastewater or reclaimed wastewater can be used for non-potable drinking water purposes such as irrigation, cooling, and industrial processing. WakeUP asks the affected governments to evaluate the potential to increase use of reclaimed wastewater, particularly onsite reuse.

There are opportunities to use stormwater and reclaimed water to meet future water supply needs, but the City needs to balance the benefit of helping to meet future needs against the cost of developing that infrastructure. For example, the wastewater treatment plants are located in more rural areas of the service area; thus, there are limited users of reclaimed water in these areas and pumping costs and associated greenhouse gas emissions need to be considered. The City has also instituted a water quality cost share program to incentivize the installation of cisterns for on-site reuse. The City will share the cost of cistern or rainwater reuse devices based upon certain established criteria of water quality benefit and customer investment.

<u>Mitigation measures should be stronger and enforceable.</u>
WakeUP is concerned that the SCI plan outlines mitigation strategies in place to address impacts of infrastructure projects, yet there is no quantitative analysis to determine if mitigation will reduce impacts to a needed level. Also, the mitigation programs in the SCI plan are non-committal. Most mitigation programs are comprehensive plan-based, and so they don't have teeth. The SCI plan includes a good inventory of problems, but recommendations are not strong enough and fail to go beyond the status quo in many instances. The impairment of Wake's creeks (noted in the plan) and lakes, and current problems of sediment and nutrient overloading in water bodies, demonstrate that even modern development standards and current stormwater controls are not sufficient to protect surface waters.
Many secondary and cumulative impacts are related to stormwater, and the local governments' programs include stormwater programs and ordinances, riparian buffer protection, floodplain protection, and open space protection to minimize impacts to water resources. The City has an instream monitoring program in place that includes biological monitoring (benthic macroinvertebrates and fish community) along with water chemistry. Section 4.10 and Appendix H contain details on the City's monitoring programs. If the instream monitoring indicates that water quality goals are not being met, the City and merger communities would reevaluate their ordinances and programs. Performing monitoring and evaluating the results against goals and revising strategies when needed is known as adaptive management. Further information on an adaptive management approach will be included in the final SCI Management Plan.

We understand the comment regarding having enforceable programs to address growth related issues. However, including policies in planning documents enables us to more easily modify them when new information and data indicates that a modified approach may be

more suitable. Including recommendations in policies and planning documents also enables us to work with developers to achieve the best plan for their particular site conditions.

Stormwater programs need funding.
We commend the towns of Wendell and Rolesville for their recent adoption of strong stormwater control programs that require using low impact development practices before a developer can buy mitigation credits. **But these programs will only be successful with meaningful, financed enforcement – which continues to be a challenge to all municipalities.**
Comment noted. Through partnership with Wake County and other merger communities, adequate levels of program financing are being examined.

Mitigation credits should be a last resort.
Eventually, we will run out of places to do mitigation, plus mitigation does not promote on-site capture and reuse of water. We must look at all our water as a resource and begin bolder steps to capture stormwater for on-site use. No net impervious surface impact should be the goal. The plan should establish a public/private sector task force to assess what incentives are needed to encourage stormwater reuse and what building code changes are needed to expedite developments that conduct appropriate pre-development hydrological studies. Practices need to be effective; building codes need to include low impact design (LID) that mimic approximately 95 percent pre-development hydrology (assessing flow, recharge). Municipal staff should be well-versed with pre-development hydrology or LID practices and goals, and should help approve good plans for developers with quality stormwater control and appropriate landscape plans.
Mitigation is only allowed in meeting total nitrogen reduction requirements; mitigation is not allowed to meet stormwater volume and flow requirements. BMPs must control and treat the difference in stormwater runoff volume leaving the project site between the pre- and post-development conditions for the 1-year, 24-hour storm. Most new development is required to have a stormwater plan that is reviewed by City staff.

Impervious surface percentages too high.
According to table 5-4 of the SCI Management Plan, which shows with projected population growth and construction of Little River Reservoir and infrastructure, imperviousness in the study area will increase from 427.8 to 1551 square miles, or

44%. The impact on streams, already under stress, will be very serious. Studies indicate that stormwater controls relied upon under NPDES Phase II and the Neuse River Rules may reduce nutrient loading, but they do not prevent increases in nutrient loading to streams as a result of increased impervious surfaces. Yet the plan does not recommend fundamental changes to reduce nutrients. **Impervious surface permitted under the SCI plan in the primary watershed protection area is too high, unless effective clustering occurs. Up to 24% impervious surface permits about one house per quarter acre. The Center for Watershed Protection and U.S. EPA have determined that impervious surface of more than 10% will lead to stream degradation and negative water quality impacts.**

Table 5-4 summarizes the future impervious surface for the entire study area based on literature values of impervious surface by land use category. This summary table is intended to show that imperviousness and thus stormwater runoff will increase without proper stormwater controls. Each of the local governments has a stormwater ordinance or is in the process of adopting a new stormwater ordinance to address this issue. This table should also be reviewed inside the context of the entire SCI Management Plan. The local governments also use planning techniques to guide growth away from certain locations. For example, the City of Raleigh does not plan on extending water and sewer service into the Little River and Falls Lake water supply watersheds. Thus, these areas were not included in the SCI Management Plan Study Area, and the levels of impervious shown on the Tables in Sections 4-3 and 5-3 are higher than they would be if the entire watershed areas were included in the tables. For the purposes of the SCI Plan, the low density residential land use category included densities that ranged from 1 house per acre to 3 houses per acre and was assumed to have an impervious value of 21%. The 10% impervious value cited by the Center for Watershed Protection and US EPA are based on studies that were completed in watersheds without the controls that have been put in place recently such as riparian buffers and stormwater BMPs.

<u>Groundwater recharge needs to be addressed.</u>

The SCI plan does not address recharging needs for wells. Recharging plans should be part of on-site stormwater capture plans. Re-charge areas should be determined and density should be reduced in those areas.

This is beyond the scope of the SCI Management Plan whose purpose is to document the growth related impacts of proposed water and wastewater infrastructure in accordance with the requirements of the North Carolina Environmental Policy Act. While groundwater recharge would be a valuable component in managing the region's water resources, it belongs in a Groundwater Plan or Total Water

Management Plan (also called Integrated Water Resources Management Plan).

Climate change effects should be considered in SCI plan.
Raleigh Public Utilities needs to evaluate the risk to our water supply from climate change. The plan describes impacts using current conditions, not the future conditions due to climate change. For example, permitting 50% of floodplain to be developed does not account for the impacts of climate change. Because the nature of climate change effects is highly uncertain, public utilities must build resiliency into infrastructure, again utilizing stormwater, on-site capture and conservation. In addition, the plan does not appear to take into consideration the double impacts on natural habitats of climate change and increased development. This ought to be factored in as well.
This is beyond the scope of the SCI Management Plan whose purpose is to document the growth related impacts of proposed water and wastewater infrastructure in accordance with the requirements of the North Carolina Environmental Policy Act. Approaches for evaluating climate change impacts are evolving, and because of the wide range of uncertainty associated with the general climate models (GCM), there is not a consensus from the agencies on how to approach this in a mid-Atlantic State like NC where only minor changes in annual precipitation are predicted by the GCMs.

Frank Powell
Town of Garner

Garner endorses holistic approach.
We are one of the communities that has merged its water and sewer utility with the City of Raleigh. In fact, we are the first community and, at the time, the largest to merge with the City. As a result of that merger the Town of Garner is a participant in this effort to address secondary and cumulative impacts. Garner commends the City of Raleigh for initiating this effort and also NC DENR for agreeing to consider looking at the secondary and cumulative impacts on a broad scope instead of on a project by project basis. Garner endorses this holistic effort as it should save time and money and provide better protection of our environment.
Comment noted.

Garner facilitating open space planning in Wake County.
Garner has a Comprehensive Growth Plan along with a Comprehensive Parks and Recreation, Open Space and Greenways Master Plan. Through these documents and through unified development ordinances that requires development to meet certain open space and tree cover

requirements we believe we are doing our part to help facilitate the Wake County Open Space Plan.
Comment noted.

Garner protects floodplains and buffers.
Garner does not allow development in any of the FEMA recognized flood plains in our jurisdiction. In addition in all but one of these FEMA recognized streams we require an additional minimum 50 ft wide buffer adjacent to FEMA flood plain to remain undisturbed and undeveloped. The buffer for designated streams that empty into Lake Benson increases to 100 feet. These buffers have been required in Garner since the mid 80s, long before State mandated buffers.
Comment noted.

Garner manages stormwater runoff.
Garner requires a combination of stormwater quality controls and impervious surface limits throughout its jurisdiction. Our entire jurisdiction is subject either one or a combination of the Water Supply Watershed Protection requirements, Neuse River Nutrient Sensitive Waters Management Strategy rules, or the NPDES Phase II stormwater requirements. I would note again that, just as with buffers, the Town of Garner implemented stormwater quality controls and impervious surface limits, in the Lake Benson watershed, long before water quality controls were mandated by the State of North Carolina.
Comment noted.

Garner manages stormwater quantity.
In addition to water quality controls, the town has required quantity controls since the mid 1980s. We require peak flow reduction to predevelopment conditions for the 1, 10, 25 and in some cases the 100 year return frequency storm.
Comment noted.

Garner works with USFWS in Swift Creek watershed.
More recently in 2005 we entered into a Memorandum of Understanding with the US Fish and Wildlife Service to provide for protection of threatened and endangered species in the Swift Creek Watershed as a result of concern over secondary and cumulative impacts for a NCDOT roadway project (US 70 – Clayton – Bypass). I would note that this project was not located in Garner's jurisdiction nor was Garner an advocate for the project. This memorandum of understanding provided for impervious limitations on new

development in the Swift Creek Watershed for areas currently in Garner's jurisdiction as well as our future jurisdiction.
Comment noted.

Alissa Bierma
Upper Neuse
RIVERKEEPER®

<u>Include Little River Reservoir and Little Creek WWTP.</u>
It is concerning that the SCI Plan does not take into consideration impacts associated with the Little River Reservoir or the Little Creek WWTP. I understand that both of these projects will be addressed through intensive NEPA/SEPA processes, but given the enormity of their physical scale and future growth impacts associated with them, it is almost impossible that potential impacts will not be missed by failing to include them in a comprehensive Secondary and Cumulative Impacts Management Plan. In order to have a full picture of the impacts related to public infrastructure in the study area, this project needs to be incorporated into the analysis.
The potential growth related issues associated with the Little River Reservoir and Little Creek WWTP are accounted for in the SCI Management Plan. They are included in the proposed infrastructure, and the need for them is based on current population projections and water and wastewater demands. However, the City and local governments have noted that the current programs in Wendell and Zebulon are not adequate to protect the endangered mussels in the Little River watershed. Thus, the Memorandum of Agreement between the City of Raleigh and DENR acknowledges that further programs are needed in Wendell and Zebulon. The SCI Management Plan cannot be used for infrastructure projects in this area until programs are approved by DENR; this would likely occur through the EA being prepared for the Little Creek WWTP. The Little River Reservoir Project is being examined through a NEPA EIS. While this EIS may reference portions of the SCI plan, the EIS must include a comprehensive evaluation of SCI. Under the MOA between the City and DENR, mitigation agreed upon through the environmental review and permitting processes for the Little Creek EA/permitting and Little River Reservoir EIS/permitting can be included as part of the SCI Plan through the biannual review process.

<u>Climate change should be addressed.</u>
It would be of great benefit to take into consideration the role that climate change will play in altering the availability of resources and options when identifying potential impacts and mitigation. Much of this plan addresses wetlands/floodpain impacts, but the value of those resources may be significantly different when you take into consideration the changes in weather and rise in water levels that are expected over the next 10-25 years. In recognition of the reality that climate

changes is already happening the State of California has recently drafted a "Climate Adaption Strategy" which evaluates the latest science on how climate change could impact the state, and provides recommendations on how to manage against those threats. The SCI is a perfect opportunity to identify and plan for the cumulative impacts of infrastructure and climate shift as each will unquestionably impact our ability to provide for future citizens of the area.
This is beyond the scope of the SCI Management Plan whose purpose is to document the growth related impacts of proposed water and wastewater infrastructure in accordance with the requirements of the North Carolina Environmental Policy Act. Approaches for evaluating climate change impacts are evolving, and because of the wide range of uncertainty associated with the general climate models (GCM), there is not a consensus from the agencies on how to approach this in a mid-Atlantic State like NC where only minor changes in annual precipitation are predicted by the GCMs. The GCMs are showing a very distinct change in the amount and timing of precipitation in California such that it is appropriate for that State to be out front in the area of climate change adaptation

<u>Groundwater recharge should be considered.</u>
Also, greater investigation and discussion of the impacts of growth and development upon groundwater recharge should be considered as part of the SCI. The groundwater protection/mitigation efforts discussed here focus primarily on quality issues yet an estimated 6-19% of rainfall in Wake County goes to recharge our underground network of wells and streams. At Wake County's average 44.7 inches per year and a study area of 428 square miles, and minimal recharge rate of 10% that's 33,250 million gallon per year returned to groundwater which provides potable water for study area residents and baseflow for our streams (35-55% of stream baseflow during normal years). The impact of impervious surfaces on recharge rates – particularly in high recharge areas – must be taken into account in order to truly understand the SCI of growth and development.
This is beyond the scope of the SCI Management Plan whose purpose is to document the growth related impacts of proposed water and wastewater infrastructure in accordance with the requirements of the North Carolina Environmental Policy Act. While groundwater recharge would provide information in managing the region's water resources, it belongs in a Groundwater Plan or Total Water Management Plan (also called Integrated Water Resources Management Plan).

Technical corrections.
Regarding the Mitigation Programs identified to address the potential impacts, specifically, I first wanted to mention a technical correction. I would guess this has already been caught through internal review, but I felt it was vital to mention in case it has slipped through the cracks: There are a number of occasions, starting in Table 1A which read: "No new or redevelopment may ~~not~~ contribute more than 3.6 lbs of Nitrogen per acre per year…"
This error will be corrected in the final version of the SCI Management Plan.

Commends Raleigh for protecting Falls Lake.
Over the last few months, the City of Raleigh has worked tirelessly to protect Falls Lake; the Water Supply on which much of the proposed infrastructure in this plan relies. The quality of upstream development has been identified as one of the main sources of problems, and as rule development to protect Falls Lake moves forward it would behoove the City of Raleigh to lead by example. Raleigh definitely has some areas where they can stand up and say they have the best policies and ordinances out there – but there are others where the City policies lag behind other localities.
Comment noted.

Raleigh should be uncontested leader in managing stormwater.
Mitigation programs in the SCI include the Town of Wake Forest which does not allow any development within the 500-year floodplain or future 100-year floodplain, as well as in the 100-year floodplain, which required 100 foot wide buffers in the Little River Watershed. Rolesville does not allow development in floodway or non-encroachment areas of 100-year floodplain and no floodplain development is allowed in WSWs. In addition, Wendell and Rolesville have recently adopted stormwater ordinances that do not allow Nitrogen buy-downs unless a site has already met certain LID requirements. I would love to see the City of Raleigh step up to be the uncontested leaders in regional stormwater management; to take a look at what else is out there and make sure they have equal if not more stringent standards, than every other local jurisdiction.
Each municipality is unique and has adopted ordinances which meet their needs while protecting the environment. This results in different types of controls with the end goal being environmental protection.

Need more protective impervious surface limits.
The Planning and Development Ordinances identified which "limit impervious surface in Reservoir Watershed Protection Overlay Districts" are not stringent enough to rely upon as mitigation measures for surface water impacts. Stream research generally indicates that at about 10% impervious cover, sensitive stream elements are lost from the system. A second threshold exists at around 25-30% impervious cover, where most indicators of stream quality consistently shift to a poor condition.
http://www.stormwatecenter.net/monitoring%20and%20assesment/imp%20cover/impercovr%20model.htm
These impervious surface thresholds are based on studies prior to development practices that include control mechanisms such as riparian buffers and stormwater runoff volume controls.

Land use planning can manage stormwater and sprawl.
There are planning mechanisms such as clustering, pervious hardscapes, and transfer of development rights that can help to reduce impervious area while avoiding the sprawl that is commonly associated with low density development. I challenge the City of Raleigh to take an aggressive stand against all unnecessary impervious cover associated with future growth and public infrastructure by adopting a "No Net Impervious Surface Policy" which works to support innovative and green development while protecting our clean water and healthy communities.
The local governments do understand the relationship between impervious surface and water quality. While it is not always practicable to not allow increases in impervious surface, the City does have a stormwater program that requires controls when imperviousness approaches 15 percent (for water supply watersheds, the percentage is lower). The City and merger communities are looking at the links between land use planning and environmental protection. The City and merger communities do allow clustering. Currently requiring transfer of development rights is not legal in North Carolina. The City recognizes the utility of these types of land planning practices; this is one reason why the City is not extending water and sewer service into the Falls Lake and Little River water supply watersheds.

Planned Unit Development ordinances should be reviewed.
I would also encourage staff to seriously evaluate "Planned Unit Development" ordinances – for effectiveness and conflicting codes that prevent these from being successful with regards to "minimizing built-upon/disturbed areas." These

ordinances have the potential to benefit both development and the environment but are difficult to rectify with many existing codes and therefore are often less successful than initially imagined.
Comment noted.

Measures should be codified.
Finally, while I understand the intent, the level of reliance upon Comprehensive Plans and Land Use Planning concerns me. I applaud the City of Raleigh's planning efforts and the level of public input that has been involved and I understand the benefit of these types of documents, but I cannot stress enough the importance of codifying any measures you plan to rely upon in the long-term. Comprehensive Plans are not legal documents for the purpose of enforcement and police power and frequently change as staff and elected officials come and go. I strongly encourage you to aggressively pursue codification of any measure referenced within the SCI that you plan to rely upon for mitigation; having a plan is not the same as taking action.
We understand the comment. However, including policies in planning documents enables us to more easily modify them when new information and data indicates that a modified approach may be more suitable. Including recommendations in policies and planning documents also enables us to work with developers to achieve the best plan for their particular site conditions.

Renee Gledhill-Early
State Historic Preservation Office

Model to identify areas with archaeological resources
In past, we have recommended that SCI documents include the development of predictive model to pinpoint areas likely to contain archaeological resources and have been told that such an undertaking is beyond the scope of a SCI document. As current document states that indirect impacts are unlikely to affect historical or archaeological resources, we assume that our recommendation for such a model will meet a similar fate.
This type of analysis is beyond the scope of the SCI document. Direct impacts to historical or archeological resources could occur, and these will be analyzed during project planning for future infrastructure projects.

Data source for archaeological site locations
Due to the fact that archaeological site locations are not public information because of risk of harm from looting, neither the National Register of Historic Places website or NCOneMap are viable sources of information regarding significant archaeological resources. There are over 1750 recorded archaeological sites in Wake County. Information regarding

these resources may be obtained from the Office of State Archaeology.
Electronically available files were used for the SCI document; historic and archaeological resources are more likely to be impacted by the direct impacts of a project. For projects which require a SEPA analysis, the Office of State Archaeology will be contacted for information in the areas surrounding specific planned infrastructure.

Table 4-11
Table 4-11 is a list of resources in the National Register of Historic Places, but none of these are listed due to their archaeological significance.
The title of the Table will be changed to "Areas of Historical Value on the National Register of Historic Places".

Comprehensive architectural survey of Wake County
The "comprehensive architectural survey of Wake County" identified architectural resources, not archaeological resources. No comprehensive archaeological survey of Wake County has been conducted.
This will be corrected in Section 4.7 of the document.

NC Archaeological Resources Protection Act
Page 6-7: The North Carolina Archaeological Resources Protection Act applies only to state lands, not private property as stated.
We concur that the North Carolina Archaeological Resources Protection Act applies only to state lands, but other laws in the list protect archaeological resources on private property. The document has not been changed.

Archaeological sites not visible
Secondary and cumulative impacts resulting from the provision of public utilities are more likely to affect archaeological sites than historic structures and buildings as they are not readily visible. For the same reason, local plans and ordinances cited in your document as providing protection and consideration of historic resources focus primarily on buildings and landscapes rather than archaeological resources.
We concur that archaeological resources are more likely to be impacted than historic structures. However, the local governments will consult with the Office of State Archaeology on any project that would require a SEPA document to minimize any direct impacts to archaeological resources. They would also rely on their plan review processes to minimize the impacts of SCI, for example development projects served by the infrastructure projects would be reviewed, and

plan review would minimize impacts to archeological resources when their location is known.

Use of terms

We would also note that the plan tends to be too general and assume a level of familiarity with historic preservation issues that may not be present among a majority of the public. It fails to identify and explain several basic terms and process involved in historic resource identification and preservation, including:

- Defining what it means to be a Certified Local Government and how this could be factored in to the planning process
- Defining the role of the Historic Preservation Commission (HPC)
- Outlining the role of the City's staff in historic preservation efforts beyond the locally designated historic properties

Section 4.7 outlines the responsibilities of a Certified Local Government and states that it must enforce state and local legislation for the protection of historic properties. Section 7.6 describes the goals, roles and responsibilities of the Historic Preservation Commission. Section 8.11 outlines efforts by the City staff and the City's Historic Districts Commission to protect properties besides those already designated. These include: designating new historic districts and structures; education programs; updating ordinances as needed; and including information on historic preservation in its Comprehensive Plan. The City's updated Comprehensive Plan was recently approved, and some information from that approved document has been added to Section 8.11.