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Background
The Falls Lake Nutrient Management Strategy, developed and enforced by the North Carolina Department of Environment and Natural Resources (DENR), requires that local governments of jurisdictions within the Falls Lake watershed develop programs to reduce nutrient loading in the receiving waterbody. There are two stages to the strategy, the first of which requires each jurisdiction to submit, by January 2013, inventories characterizing the load reduction potential for seven primary programs.

This document fulfills the Stage I load reduction inventory requirements under 15A NCAC 02B .0278(3), and describes Butner’s opportunities to meet the associated minimum standards. It is submitted by Butner for approval by the Commission.

Stage I Load Reduction Programs
The Falls Lake Nutrient Management Strategy identifies six specific areas in which load reductions may be achieved. Under Stage I of the programs, local governments must develop inventories and characterize load reduction potential (to the extent that accounting methods allow) for each. Butner’s programs and the associated load reduction potential are described below.

Wastewater Collection Systems
Nutrient loading can be reduced through the improvement of wastewater collection systems. Specifically, proper system maintenance will result in a reduction in both dry weather leaks to surface water and wet weather overflows, which will in turn reduce nutrient loading. In Butner, the South Granville Water and Sewer Authority (SGWASA) has jurisdiction over the wastewater collection system and treatment plant. As such, SGWASA is responsible for the maintenance of the system and is the beneficiary of any nutrient load reductions realized through that program. These load reductions are not expected to apply to Butner’s load reduction program. Additionally, Lindsay Mize, the executive director of SGWASA, does not expect to have nutrient load reductions beyond those required for the Falls Nutrient Strategy for Wastewater Discharge.

Discharging Sand Filter Systems
There are no discharging sand filter systems within Butner. Therefore, there is no opportunity to achieve load reduction within this program.

Septic Systems
An inventory of septic systems throughout Butner is included in the Person and Granville County Septic System Field Performance Assessment, being completed by NC State. The results of this assessment will be presented under a separate cover from this inventory.
Utility Corridors
Utility corridors are commonly mowed areas surrounding components of utility infrastructure. Restoration of barren or grassy utility corridors to those supporting hardier vegetation can reduce runoff via interception and consequently reduce nutrient loading. According to the Jordan/Falls Lake Stormwater Nutrient Loading Accounting Tool, the conversion of managed pervious cover (the assumed cover for utility corridors) to forested cover will yield load reductions of .85 lbs/ac/yr of N and .18 lb/ac/yr of P.

Butner has limited to no opportunities to replace or supplement existing vegetation with species which will reduce runoff in utility corridors. The reason is that in preliminary discussions with the utilities involved, they have expressed strongly that the current corridors are already cleared to the minimum widths that the utility requires. Since this reduction would be contingent upon the application of a conservation easement on the land, as well as an agreement from an operational perspective that the utility could provide its services with a narrower easement, it is unlikely that significant reductions can be achieved from revegetation.

For power lines, hardier vegetation such as trees can grow up into the lines and cause power outages. According to Tanya Evans, the district manager serving Granville County for Duke Power, federal regulations impose a one million dollar per day fine for outages caused by vegetation. As a result the power company maintains ownership of vegetation management in their corridors and does not allow hardier vegetation to be grown in these utility corridors.

Underground utilities require corridors free of larger vegetation because roots can grow into the pipes and break the pipes causing water and sewer spills requiring service to be stopped to homes and businesses while the lines are repaired and requiring clean up of any sewage spills. Additionally, water and sewer lines must be accessible both for routine maintenance and in the event of a broken or damaged pipe in order to make repairs and clean up any spills. If the corridors were allowed to have larger vegetation it could take many hours to clear a path for access to the damaged pipe creating a much larger spill. This makes it very important for water and sewer corridors to remain grassy, with no large vegetation that would obstruct maintenance of the lines or possibly cause damage to the pipes. For these reasons, Butner does not have an opportunity to replace or supplement existing vegetation with species which will reduce runoff. Lindsay Mize, executive director of the South Granville Water and Sewer Authority confirmed that he keeps his utility corridors free of larger vegetation in order to keep them accessible for repair as well as to prevent damage to the water and sewer lines from tree and shrub roots growing into the pipes.

Fertilizer Management Plan
In many cases, fertilizers containing nutrients such as phosphorus, nitrogen, and potassium are applied to managed vegetation in excess of levels that can be taken up by the grass. Stormwater runoff can quickly transport remaining nutrients to receiving waterbodies. For local government-owned properties, this nutrient loading can be reduced with a variety of strategies, addressing fertilizer composition, application, and maintenance.
Butner is considering a fertilizer management plan for its properties within the Town boundary. Butner has approximately 46.26 acres that are currently managed by our Public Works Department. The following table details the areas within Butner that will be subject to this plan. School properties have been excluded from this list as their property management is under the control of the school district rather than that of the jurisdiction.

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Total Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Town Hall</td>
<td>8.69 Acres</td>
</tr>
<tr>
<td>Sports Arena</td>
<td>2 Acres</td>
</tr>
<tr>
<td>Butner Athletic Park</td>
<td>30 Acres</td>
</tr>
<tr>
<td>Public Works</td>
<td>2.46 Acres</td>
</tr>
<tr>
<td>Gazebo Park</td>
<td>2.39 Acres</td>
</tr>
<tr>
<td>600 Central Avenue</td>
<td>.72 Acres</td>
</tr>
</tbody>
</table>

Specifically, Butner is considering implementation of practices such as:

- Soil sample testing prior to application of any supplemental fertilizer products to determine the need for supplemental fertilizer;
- Minimize supplemental fertilizer products containing phosphorus using them only when necessary for new grass that is getting established;
- Minimize fertilizer rates on slopes;
- Maintain a buffer zone of low maintenance grasses along surface water bodies;
- Consider using Fe (Iron) as a supplement to Nitrogen for greening response;
- Time applications of supplemental fertilizer carefully. Do not apply fertilizer before a heavy rainfall;
- Recycle grass clippings to reduce the amount of fertilizer needed to produce healthy turf; and
- Use a drop spreader near surface water bodies.

Nutrient loading will be calculated based on the Jordan/Falls Lake Stormwater Nutrient Loading Accounting Tool.

**Structural Stormwater Practices**

There are very few opportunities for retrofitting of BMPs (per DENR’s Stormwater Best Management Practices Manual) throughout Butner to reduce nutrient loading. BMPs that are available for retrofitting have been implemented under the Universal Stormwater Management Program and water supply/watershed rules. Since Butner’s incorporation in 2007 and implementation of the USMP in 2008, stormwater BMP’s constructed since 2007 have all been either wet ponds or bioretention cells. Other than making an existing wet pond or bioretention cell larger there is not an opportunity for retrofit of those devices to achieve greater nutrient reduction. There is one dry pond on a property developed prior to Butner’s incorporation that might be able to be converted to a wet pond. The following table describes these practices and the associated nutrient loading reduction anticipated through retrofitting. These parcels are also displayed on the map in Appendix A.
### Table 4. Stormwater BMPs and nutrient loading reduction potential

<table>
<thead>
<tr>
<th>Structure</th>
<th>Intended Purpose</th>
<th>Area Impacted*</th>
<th>Potential for Nutrient Control</th>
<th>Condition</th>
<th>Retrofit Possibility**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butner Town Hall</td>
<td>Volume Control for small streams</td>
<td>8.74</td>
<td>35% N; 45% P Bioretention</td>
<td>Good</td>
<td>Enlarge bioretention cells</td>
</tr>
<tr>
<td>Butner Athletic Park</td>
<td>Volume Control for small streams</td>
<td>30</td>
<td>35% N; 45% P Bioretention 25% N; 40% P Wet pond</td>
<td>Good</td>
<td>Not much space to enlarge bioretention cells or wet pond</td>
</tr>
<tr>
<td>Library and Early College</td>
<td>Volume Control for small streams</td>
<td>5.18</td>
<td>35% N; 45% P Bioretention</td>
<td>Good</td>
<td>Enlarge bioretention cells</td>
</tr>
<tr>
<td>Falls Lake Commerce Center</td>
<td>Volume Control for small streams</td>
<td>35.5</td>
<td>25% N; 40% P Wet pond</td>
<td>Good</td>
<td>Not much space to enlarge wet pond</td>
</tr>
<tr>
<td>Butner-Creedmoor Family Medicine</td>
<td>Volume Control for small streams</td>
<td>3.52</td>
<td>35% N; 45% P Bioretention</td>
<td>Good</td>
<td>Not much space to Enlarge bioretention cells</td>
</tr>
<tr>
<td>Dollar General (NC 56)</td>
<td>Volume Control for small streams</td>
<td>4.16</td>
<td>25% N; 40% P Wet Pond</td>
<td>Good</td>
<td>Enlarge wet pond</td>
</tr>
<tr>
<td>Ritchie Bros</td>
<td>Volume Control for small streams</td>
<td>112.7</td>
<td>25% N; 40% P Wet Pond</td>
<td>Good</td>
<td>Enlarge wet pond</td>
</tr>
<tr>
<td>AA Self Storage</td>
<td>Volume Control for small streams</td>
<td>12.45</td>
<td>35% N; 45% P Bioretention</td>
<td>Good</td>
<td>Enlarge bioretention cells</td>
</tr>
<tr>
<td>Sonic</td>
<td>Volume Control for small streams</td>
<td>.89</td>
<td>15% N; 30% P</td>
<td>Good</td>
<td>Convert dry pond to wet pond</td>
</tr>
<tr>
<td>Altec</td>
<td>Volume Control for small streams</td>
<td>41.53</td>
<td></td>
<td>Good</td>
<td>None property owner is planning their own retrofit</td>
</tr>
<tr>
<td>Blue Linx/APB Distribution</td>
<td>Volume Control for small streams</td>
<td>54.83</td>
<td></td>
<td>Good</td>
<td>None – existing wet pond is also for fire suppression system</td>
</tr>
</tbody>
</table>

*Rough approximation of acres that could be affected

**All retrofit possibilities require further investigation by Butner as the Stage I program is developed.

There does not appear to be much opportunity for Butner to retrofit existing BMP’s to get a higher nutrient reduction since nearly all existing structures are relatively new and either wet detention or bioretention. Butner is currently researching opportunities for installing a BMP on a property without any existing stormwater control as a possibility for nutrient reduction.
Wetlands and Riparian Buffers

Local governments may restore riparian buffers on developed or agricultural lands where riparian zones are currently under cultivation or other managed vegetative cover. Butner may have the opportunity to achieve nutrient load reductions through hydrologic restoration (including diffuse flow) and reforestation. Reductions are estimated using the Division’s credit yield calculation method\(^1\). It is estimated that 3.16 acres of riparian buffers may be available for reforestation and the nutrient loading reduction potential has been estimated below.

Table 5. Stormwater BMPs and nutrient loading reduction potential

<table>
<thead>
<tr>
<th>Acres of Buffer</th>
<th>N Removal</th>
<th>Total Annual N Removal</th>
<th>P Removal</th>
<th>Total Annual P Removal</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.16</td>
<td>75.77 lbs/ac/yr</td>
<td>239.43 lbs</td>
<td>4.88 lbs/ac/yr</td>
<td>15.42 lbs</td>
</tr>
</tbody>
</table>

Jurisdictional wetlands are displayed the map included as Appendix A. The Town of Butner has noted that many properties on this map display wetlands that have been discovered to be much smaller with a more detailed study. For this reason the map is not very reliable and further study would have to be done to determine if there are any wetlands that could be restored to provide a reduction in nutrients. DWQ has not specified accounting methods for nutrient load reduction through wetland restoration. At this time Butner assumes that there will not be any potential for wetland restoration as a way to reduce nutrients in the watershed.

While Butner does not see much opportunity for riparian buffer or wetland restoration, Butner does own a large tract, 750 acres, of undisturbed land with many streams. This property is very close to Falls Lake and some of it is in critical area watershed for Falls Lake. Due to the highly erodible soils in Butner, these streams have a lot of erosion. There may be some possibility for stream restoration that could reduce the amount of soil eroding into the stream and therefore a nutrient reduction. DWQ has not specified an accounting method for nutrient reduction through stream restoration as opposed to riparian buffer restoration, but this is an area Butner plans to research further for potential nutrient reduction.

\(^1\) NC Division of Water Quality – Methodology and Calculations for determining Nutrient Reductions associated with Riparian Buffer Establishment
Appendix A. Nutrient Load Reduction Programs Reference Map
Nutrient Load Reduction Programs Reference Map
Submitted to the North Carolina Division of Water Quality
As part of the Falls Lake Nutrient Management Strategy
Existing Development Inventory of
Selected Items for Nutrient Loading Reduction
January 30, 2013

Legend
- Parcels with existing Stormwater BMP
- Wetlands
- Streams
- Ponds and Lakes
- Parcels
- Centerlines
- Butner City Limits

Detailed Study shows much smaller wetland area