



North Carolina Department of Environment and Natural Resources

Division of Water Quality

Charles Wakild, P. E.

Director

Pat McCrory  
Governor

John E. Skvarla, III  
Secretary

**DATE OF PERMIT ISSUANCE**

Tim Woody – Wastewater and Reuse Superintendent  
City of Raleigh  
P.O. Box 590  
Raleigh, NC 27602

Subject: Permit No. WQ0001730  
City of Raleigh  
Land Application of Class B  
Residuals (Dedicated)  
Wake County

Dear Mr. Woody:

In accordance with your permit major modification request received May 10, 2012, and subsequent additional information received July 25, 2012, October 31, 2012, November 29, 2012, February 15, 2013, and May 10, 2013, we are forwarding herewith Permit No. WQ0001730 dated **DATE OF PERMIT ISSUANCE**, to the City of Raleigh for the continued operation of the subject residuals management program.

Modifications to the subject permit are as follows:

- ◆ Resumption of residuals land application on selected fields surrounding the Neuse River WWTP.
- ◆ Adding requirements for installation of the Vadose zone monitoring stations.
- ◆ Updating the permit to meet 15A NCAC 02T.1100.

Please note that on August 5, 2009, Session Law 2009-406, entitled “An Act to Extend Certain Government Approvals Affecting the Development of Real Property Within the State,” was enacted by the General Assembly and signed into law. The Act, known as the Permit Extension Act of 2009, extends the expiration date of certain government approvals and permits. In addition, Session Law 2010-177 extended the Act by another year. Permit No. WQ0001730 falls within the scope of this Act and is therefore being extended until March 31, 2016. A renewal application must still be submitted six months in advance of the extended expiration date.

This permit shall be effective from the date of issuance until March 31, 2016, shall void Permit No. WQ0001730 issued August 27, 2009, and shall be subject to the conditions and limitations as specified therein. Please pay particular attention to the monitoring requirements listed in Attachments A and C for they may differ from the previous permit issuance. Failure to establish an adequate system for

AQUIFER PROTECTION SECTION  
1636 Mail Service Center, Raleigh, North Carolina 27699-1636  
Location: 512 N. Salisbury St., Raleigh, North Carolina 27604  
Phone: 919-807-6464 \ FAX: 919-807-6496  
Internet: <http://portal.ncdenr.org/web/wq/aps>

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Mr. Woody

**DATE OF PERMIT**

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collecting and maintaining the required operational information shall result in future compliance problems.

Please note that on September 1, 2006, North Carolina Administrative Code Title 15A Subchapter 02T – Waste not Discharged to Surface Waters was adopted. Accordingly, this permit incorporates the requirements of these rules, therefore, please **take the time to review this permit thoroughly**.

If any parts, requirements or limitations contained in this permit are unacceptable, the Permittee has the right to request an adjudicatory hearing upon written request within 30 days following receipt of this permit. This request shall be in the form of a written petition, conforming to Chapter 150B of the North Carolina General Statutes, and filed with the Office of Administrative Hearings at 6714 Mail Service Center, Raleigh, NC 27699-6714. Unless such demands are made, this permit shall be final and binding.

If you need additional information concerning this matter, please contact Chonticha McDaniel at (919) 807-6337 or [chonticha.mcdaniel@ncdenr.gov](mailto:chonticha.mcdaniel@ncdenr.gov).

Sincerely,

Charles Wakild, P. E.

cc: Duplin County Health Department  
Sampson County Health Department  
Wake County Health Department  
Fayetteville Regional Office, Aquifer Protection Section  
Raleigh Regional Office, Aquifer Protection Section  
Wilmington Regional Office, Aquifer Protection Section  
Eric G. Lappala, PE – Eagle Resources (PO Box 11189, Southport, NC 28461-1189)  
Beth Buffington, Aquifer Protection Section  
Permit File WQ0001730  
Notebook File WQ0001730

**NORTH CAROLINA**  
**ENVIRONMENTAL MANAGEMENT COMMISSION**  
**DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES**

**RALEIGH**

**LAND APPLICATION OF CLASS B RESIDUAL SOLIDS PERMIT (DEDICATED)**

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In accordance with the provisions of Article 21 of Chapter 143, General Statutes of North Carolina as amended, and other applicable Laws, Rules, and Regulations

PERMISSION IS HEREBY GRANTED TO

**City of Raleigh**  
Wake County

FOR THE

continued operation of a residuals management program for the City of Raleigh and consisting of the land application of Class B residuals generated by the approved facilities listed in Attachment A to the approved sites listed in Attachment B, as well as the conjunctive irrigation of reclaimed water generated by the Neuse River WWTP on the approved fields specified in Attachment B, with no discharge of wastes to surface waters, pursuant to the application received May 10, 2012, and subsequent additional information received by the Division of Water Quality, and in conformity with other supporting data subsequently filed and approved by the Department of Environment and Natural Resources and considered a part of this permit. The use and disposal of residuals are regulated under Title 40 Code of Federal Regulations Part 503. This permit does not exempt the Permittee from complying with the federal regulations,

This permit shall be effective from the date of issuance until March 31, 2016, shall void Permit No. WQ0001730 issued August 27, 2009, and shall be subject to the following specified conditions and limitations:

**I. SCHEDULES**

1. No later than six months prior to the expiration of this permit, the Permittee shall request renewal of this permit on official Division forms. Upon receipt of the request, the Division will review the adequacy of the facilities described therein, and if warranted, will renew the permit for such period of time and under such conditions and limitations as it may deem appropriate. Please note Rule 15A NCAC 02T .0105(d) requires an updated site map to be submitted with the permit renewal application.
2. The permittee shall be in full compliance with the regional office notification requirements established in Condition III.3. within 90 days of the effective date of this permit.

3. Within 90 days of the effective date of this permit, the Permittee shall install Vadose zone monitoring stations in fields 8, 33, and 45, unless a different field is approved by the Division. The proposed Drain Gauge G3 samplers or comparable device shall be installed at least 10 feet from the edge/into the areas to which biosolids will be applied. For each of the monitoring stations, at minimum, two Drain Gauge G3 samplers or comparable device shall be installed [one at a depth of 24 inches and another one above the seasonal high water table or rock (whichever appears first in the soil profile)]. The Raleigh Regional Office, telephone number (919) 791-4200, shall be contacted prior to installation of the monitoring stations such that the monitoring location(s) can be verified.

In the event that the proposed sample apparatus (i.e. Drain Gauge G3) fails to perform, the Permittee shall replace it with a suction lysimeter.

## II. PERFORMANCE STANDARDS

1. In order to address and resolve satisfactorily operational problems associated with the residuals land application program, the Permittee shall continue the following activities no later than the date indicated in this compliance schedule:

<b>Groundwater Corrective Action</b>	
<b>Activity</b>	<b>Status</b>
<ul style="list-style-type: none"> <li>◆ Provision of bottled potable water to or connection to the municipal potable water distribution system of any additional properties served by water supply wells identified by the Division or the Permittee as being impacted or potentially impacted by the groundwater contamination at and migrating from the Neuse River WWTP land application sites. Properties identified as being impacted by the migration of the groundwater contamination subsequent to the issuance of this permit shall be provided with alternative potable water within <b>24 hours</b> of first knowledge of said impact.</li> </ul>	Ongoing (until 2L standards are achieved in associated monitoring wells)
<ul style="list-style-type: none"> <li>◆ Implement the groundwater corrective action plan comprising the groundwater extraction system and groundwater monitoring program, which was submitted to DWQ on December 1, 2005 and approved by DWQ on July 19, 2006, as modified in accordance with conditions included in the approval letter (“Revised CAP”) [implementation begun in January 2008].</li> </ul>	Ongoing (until 2L standards are achieved in associated monitoring wells)
<ul style="list-style-type: none"> <li>◆ Submit a written report to DWQ-Raleigh Regional Office-Aquifer Protection Supervisor pursuant to the Revised CAP.</li> </ul>	January 31 <sup>st</sup> of each year

<b>On-site Subsurface Flow Treatment Wetlands</b>	
<b>Activity</b>	<b>Status</b>
◆ Operation of the subsurface flow wetlands (SSF Wetlands) pursuant to the Nitrogen Mitigation Plan and all necessary regulatory approvals for the SSF wetlands.	Ongoing operation
◆ Inspect the SSF Wetlands and maintain records of such inspections pursuant to the monitoring plan approved by DWQ. If inspection reveals any failure(s) in structural integrity, flow routing, and operational functionality, <u>The Division shall be contacted according to the reporting requirements established in Condition IV.17.</u>	Monthly, unless a different frequency is approved in writing by DWQ
◆ Submit a written report to DWQ-Raleigh Regional Office-Aquifer Protection Supervisor on the operation, performance, monitoring, and maintenance of the SSF Wetlands in the prior calendar year.	January 31 <sup>st</sup> of each year
<b>Off-site Riparian Buffer Restoration</b>	
<b>Activity</b>	<b>Status</b>
◆ Operation of the Riparian Buffer Restoration Project.	Ongoing operation
◆ Inspect the Riparian Buffer Restoration Project and maintain records of such inspections pursuant to the monitoring plan approved by DWQ. If inspection reveals any need for maintenance or supplemental planting, within 30 days of such observation, implement any necessary remedial actions and notify DWQ in writing of the remedial actions taken	Annually, unless a different frequency is approved in writing by DWQ.
◆ Submit a written report to DWQ-Raleigh Regional Office-Aquifer Protection Supervisor on the results of the annual inspection of the Riparian Buffer Restoration Project and any maintenance or remedial actions taken in the prior calendar year.	January 31 <sup>st</sup> of each year

2. For all non-dedicated sites, the subject residuals management shall be effectively maintained and operated at all times so there is no discharge to surface waters, nor any contravention of groundwater or surface water standards. For dedicated sites (as identified on Attachment B, under footnote g.), the residuals land application and reclaimed water irrigation programs shall be effectively maintained and operated at all times so there is no discharge to surface waters, nor any contravention of groundwater or surface water standards resulting from activities occurring after the implementation of the groundwater corrective action plan as described in Condition II.1. In the event the facilities fail to perform satisfactorily, including the creation of nuisance conditions due to improper operation and maintenance, the Permittee shall immediately cease land applying residuals to the site, contact the Raleigh regional office's Aquifer Protection Section supervisor, and take any immediate corrective actions.
3. This permit shall not relieve the Permittee of their responsibility for damages to groundwater or surface water resulting from the operation of this residuals management and reclaimed water irrigation programs
4. Only reclaimed water generated from the Neuse River WWTP that meet the effluent limits on Attachment A of permit number WQ0016222, shall be approved for reclaimed water irrigation in accordance with this permit and the approved spray irrigation operation plan.

5. All wells constructed for purposes of groundwater monitoring shall be constructed in accordance with 15A NCAC 02C .0108 (Standards of Construction for Wells Other than Water Supply), and any other jurisdictional laws and regulations pertaining to well construction.
6. Only residuals generated by the facilities listed in Attachment A are approved for land application in accordance with this permit.
7. Only the sites listed in Attachment B shall be approved for residuals land application or reclaimed water irrigation.
8. This permit shall become voidable with respect to any land application site listed in the most recently-certified Attachment B of this permit if an agreement between the Permittee and the land owner and lessee or operator of such site is not in full force and effect. These agreements shall be in a form required by the Division and shall be considered expired concurrent with the expiration date of the permit and shall be renewed at the same time the permit is renewed.
9. Pollutant concentrations in residuals applied to land application sites listed in Attachment B shall not exceed the following **Ceiling Concentrations** (i.e., dry weight basis) or **Cumulative Pollutant Loading Rates (CPLRs)**:

<b>Parameter</b>	<b>Ceiling Concentration</b> <i>(milligrams per kilogram)</i>	<b>CPLR</b> <i>(pounds per acre)</i>
Arsenic	75	36
Cadmium	85	34
Copper	4,300	1,338
Lead	840	267
Mercury	57	15
Molybdenum	75	n/a
Nickel	420	374
Selenium	100	89
Zinc	7,500	2,498

The Permittee shall determine compliance with the CPLRs using one of the following methods:

- a. By calculating the existing cumulative level of pollutants using actual analytical data from all historical land application events of residuals, or
  - b. For land where residuals application have not occurred or for which the required data is incomplete, by determining background concentrations through representative soil sampling.
10. Residuals that are land applied shall meet Class B pathogen reduction requirements in 15A NCAC 02T .1106 (a) and (c). Exceptions to this requirement shall be specified in Attachment A.
  11. Biological residuals (i.e. residuals generated during the treatment of domestic or animal processing wastewater, or the biological treatment of industrial wastewater, and as identified in Attachment A) that are land applied shall meet one of the vector attraction reduction alternatives in 15A NCAC 02T .1107(a). Exceptions to this requirement shall be specified in Attachment A.
  12. Land application areas shall be clearly marked on each site prior to and during any residuals application or reclaimed water irrigation event.

13. When irrigating reclaimed water to any land application site, the following setbacks shall be maintained at all times (all distances in feet):

- i. Surface waters not classified SA: 25
- ii. Surface waters classified SA: 100
- iii. Any water supply wells: 100
- iv. Any non-potable wells: 10
- v. Any swimming pools: 25

14. When land applying residuals to any land application site, the following setbacks shall be maintained at all times:

Setback Description	Setback by application type (feet)		
	Vehicular Surface Application	Irrigation Surface Application	Injection / Incorporation
Habitable residence or place of public assembly under separate ownership or not to be maintained as part of the project site	400	400	200
Habitable residence or places of public assembly owned by the Permittee, the owner of the land, or the lessee/operator of the land to be maintained as part of the project site	0	200	0
Property lines	50	150	50
Public right of way	50	50	50
Private or public water supply	100	100	100
Surface waters (streams – intermittent and perennial, perennial waterbodies, and wetlands)	100	100	50
Surface water diversions (ephemeral streams, waterways, ditches) *	25	100	25
Groundwater lowering ditches (where the bottom of the ditch intersects the SHWT)	25	100	25
Subsurface groundwater lowering system	0	100	0
Wells with exception to monitoring wells	100	100	100
Bedrock outcrops	25	25	25
Top of slope of embankments or cuts of two feet or more in vertical height	15	15	15
Building foundations or basements	0	15	0
Water lines	0	10	0
Swimming pools	100	100	100
Nitrification fields	0	20	0

\* a variance has been granted for Site 04-01 through 04-10 (see Condition IV.8. for more details).

15. Bulk residuals and other sources of Plant Available Nitrogen (PAN) shall not be applied in exceedance of agronomic rates. Appropriate agronomic rates shall be calculated using expected nitrogen requirements based on the determined Realistic Yield Expectations (RYE) using any of the following methods:
  - a. North Carolina Historical Data for specific crop and soil types as provided by North Carolina State University Department of Soil Science (<http://nutrients.soil.ncsu.edu/yields/index.php>). After 5 years of crop yield data collection, the actual site specific RYE shall be used at the Neuse River site as specified in Item b.
  - b. Division's pre-approved site specific historical data for specific crop or soil types by calculating the mean of the best three yields of the last five consecutive crop harvests for each field. The Permittee shall begin collecting crop yield data at the Neuse River site immediately after resumption of the land application activity. After collecting data for 5 years, this site-specific RYE shall be used to determine appropriate agronomic rates.
  - c. If the RYE and appropriate nutrient application rates cannot be determined, the Permittee shall contact the Division to determine necessary action.
16. When PAN loading rates are calculated for a dedicated field (as identified on Attachment B), the calculation shall account for the current-year PAN and carry-over PAN from the previous four years of residuals application on soils (i.e. using the five-year PAN instead of first-year PAN).
17. When residuals are land applied to grazed pasture, hay crop realistic nitrogen rate shall be reduced by 25% in accordance with the USDA-NRCS 590 Nutrient Management Standards.
18. If land application sites are to be over-seeded or double-cropped (e.g., bermuda grass in the summer and rye grass in the winter with both crops to receive residuals), then the second crop can receive an application of PAN at a rate not to exceed 50 pounds per acre per year (lbs/ac/yr). This practice may be allowed as long as the second crop is to be harvested or grazed. If the second crop is to be planted for erosion control only and is to be tilled into the soil, then no additional PAN shall be applied.
19. Prior to land application of residuals containing a sodium adsorption ratio (SAR) of 10 or higher, the Permittee shall obtain and implement recommendations from at least one of the following: the local Cooperative Extension Office; the Department of Agriculture and Consumer Services; the Natural Resource Conservation Service; a North Carolina Licensed Soil Scientist; or an agronomist. The recommendations shall address the sodium application rate, soil amendments (e.g., gypsum, etc.), or a mechanism for maintaining site integrity and conditions conducive to crop growth. The Permittee shall maintain written records of these recommendations and details of their implementation.
20. The compliance boundary for residual land application sites shall be specified in accordance with 15A NCAC 02L .0107(b). These sites were individually permitted on or after December 30, 1983; therefore, the compliance boundary is established at either 250 feet from the residual land application area, or 50 feet within the property boundary, whichever is closest to the residual land application area. An exceedance of groundwater standards at or beyond the compliance boundary is subject to remediation action according to 15A NCAC 02L .0106(d)(2) as well as enforcement actions in accordance with North Carolina General Statute 143-215.6A through 143-215.6C. Any approved relocation of the COMPLIANCE BOUNDARY will be noted in Attachment B.
21. In accordance with 15A NCAC 02L .0108, the review boundary shall be established midway between the compliance boundary and the residual land application area. Any exceedance of groundwater standards at the review boundary shall require action in accordance with 15A NCAC 02L .0106.
22. The Compliance and Review Boundaries for the reclaimed utilization areas are established at the utilization area boundaries. Any exceedance of standards at the Compliance or Review Boundary shall require action in accordance with 15A NCAC 02L .0106.

### **III. OPERATION AND MAINTENANCE REQUIREMENTS**

1. The residuals management program shall be properly maintained and operated at all times. The program shall be effectively maintained and operated as a non-discharge system to prevent any contravention of surface water or groundwater standards.
2. The Raleigh Regional Office, telephone number (919) 791-4200, and the appropriate local government official (i.e., county manager, city manager, or health director) shall be notified at least 48 hours prior to the initial residuals land application or reclaimed water irrigation to any new land application site. Notification to the Aquifer Protection Section's regional supervisor shall be made from 8:00 a.m. until 5:00 p.m. on Monday through Friday, excluding State Holidays.
3. The Raleigh Regional Office shall be notified via email or telephone, (919) 791-4200, at least 24 hours prior to conducting any land application activity (submission of a planned schedule of the land application events monthly or per growing season is also acceptable). Such notification shall indicate, at a minimum, the anticipated application times, field IDs, and location of land application activities. If it becomes necessary to apply to additional fields due to unforeseen events, the Regional Office shall be notified prior to commencing the application to those fields.

Land application on dedicated fields at the Neuse River WWTP (as identified in Attachment B) is exempt from this permit requirement.

4. The Permittee shall maintain an approved Operation and Maintenance Plan (O&M Plan) pursuant to 15A NCAC 02T .1110. Modifications to the O&M Plan shall be approved by the Division prior to utilization of the new plan. The O&M Plan, at the minimum, shall include:
  - a) Operational functions;
  - b) Maintenance schedules;
  - c) Safety measures;
  - d) Spill response plan;
  - e) Inspection plan including the following information:
    - i. Names and/or titles of personnel responsible for conducting the inspections;
    - ii. Frequency and location of inspections, including those to be conducted by the ORC, and procedures to assure that the selected location(s) and inspection frequency are representative of the residuals management program;
    - iii. Detailed description of inspection procedures including record keeping and actions to be taken by the inspector in the event that noncompliance is observed pursuant to the noncompliance notification requirements under the monitoring and reporting section of the permit;
  - f) Sampling and monitoring plan including the following information:
    - i. Names and/or titles of personnel responsible for conducting the sampling and monitoring;
    - ii. Detailed description of monitoring procedures including parameters to be monitored;
    - iii. Sampling frequency and procedures to assure that representative samples are being collected. Fluctuation in temperature, flow, and other operating conditions can affect the quality of the residuals gathered during a particular sampling event. The sampling plan shall account for any foreseen fluctuations in residuals quality and indicate the most limiting times for residuals to meet pathogen and vector attraction reduction requirements (e.g. facilities that land apply multiple times per year but have an annual sampling frequency, may need to sample during winter months when pathogen reduction is most likely to be negatively affected by cold temperatures).

5. Prior to land applying residuals or irrigating reclaimed water to any land application site that has previously received or is intended to receive animal waste (e.g., poultry litter, etc.) or other source of nutrients (e.g., fertilizer, etc.) in the future, the Permittee shall obtain information pertaining to the volume and analysis of the applied waste/nutrients from the landowner and/or lessee/operator of the site. The Permittee shall be responsible for verifying the volume of residuals that may be land applied or reclaimed water that may be irrigated to the site such that the plant available nitrogen (PAN) loading rate for the specified crop shall not be exceeded by all of the sources of PAN applied. Should the maximum PAN loading rate be met or exceeded, then no additional residuals or reclaimed water shall be land applied or irrigated to the site for that calendar year.

For dedicated fields at the Neuse River WWTP, no other source of nitrogen (e.g., animal waste, commercial fertilizer, etc.) shall be applied, except for WTP residuals or Raleigh Plus Class A product which may be applied on these fields as supplemental fertilization.

6. Upon the Water Pollution Control System Operators Certification Commission's (WPCSOCC) classification of the facility, the Permittee shall designate and employ a certified operator in responsible charge (ORC) and one or more certified operators as back-up ORCs in accordance with 15A NCAC 08G .0201. The ORC or their back-up shall visit the facilities in accordance with 15A NCAC 08G. 0204, or as specified in the most recently approved O&M plan (i.e., see Condition III. 4.), and shall comply with all other conditions of 15A NCAC 08G. 0204. For more information regarding classification and designation requirements, please contact the Division of Water Quality's Technical Assistance & Certification Unit at (919) 733-0026.
7. When the Permittee land applies bulk residuals, a copy of this permit and a copy of O&M Plan shall be maintained at the land application sites during land application activities.
8. When the Permittee transports or land applies bulk residuals or reclaimed water, the spill control provisions shall be maintained in all residuals transport and application vehicles.
9. Residuals and reclaimed water shall not be stored at any land application field, unless written approval has been requested and received from the Division.
10. When the Permittee land applies bulk residuals or irrigates reclaimed water, adequate measures shall be taken to prevent wind erosion and surface runoff from conveying residuals or reclaimed water from the land application sites onto adjacent properties or into surface waters.
11. When the Permittee land applies bulk residuals or irrigates reclaimed water, a suitable vegetative cover (or plant stubble from a No-till operation) shall be maintained on land application sites onto which residuals are applied in accordance with the crop management plan outlined by the local Cooperative Extension Office, the Department of Agriculture and Consumer Services, the Natural Resource Conservation Service, or an agronomist and as approved by the Division.
12. Bulk residuals shall not be land applied under the following conditions:
  - a. If the residuals are likely to adversely affect a threatened or endangered species listed under section 4 of the Endangered Species Act or its designated critical habitat;
  - b. If the application causes prolonged nuisance conditions;
  - c. If the land fails to assimilate the bulk residuals or the application causes the contravention of surface water or groundwater standards;
  - d. If the land is flooded, frozen or snow-covered, or is otherwise in a condition such that runoff of the residuals would occur;
  - e. Within the 100-year flood elevation, unless the bulk residuals are injected or incorporated within a 24-hour period following a residuals land application event;

- f. During a measurable precipitation event (i.e., greater than 0.01 inch per hour), or within 24 hours following a rainfall event of 0.5 inches or greater in a 24-hour period;
- g. If the slope is greater than 10% for surface applied liquid residuals, or if the slope is greater than 18% for injected or incorporated bulk liquid residuals;
- h. If the soil matrix pH is not maintained at 6.0 or greater, unless sufficient amounts of lime are applied to achieve a final soil matrix pH of at least 6.0, or if an agronomist provides information indicating that the pH of the soil, residuals and lime mixture is suitable for the specified crop. Any approved variations to the acceptable soil matrix pH (6.0) will be noted in this permit;
- i. If the land does not have an established vegetative cover unless the residuals are incorporated or injected within a 24-hour period following a residuals land application event. Any field that is in a USDA no-till program shall be exempted from meeting this vegetative cover requirement;
- j. If the vertical separation between the seasonal high water table and the depth of residuals application is less than one foot;
- k. If the vertical separation of bedrock and the depth of residuals application is less than one foot;
- l. Application exceeds agronomic rates.

13. The following **public access** restrictions apply to residual land application sites:

- a. Public access to public contact sites (e.g., golf courses, parks, ball fields, etc.) shall be restricted for 365 days after a residuals land application event;
- b. Public access to non-public contact sites shall be restricted for 30 days after a residuals land application event.

14. Public access controls shall include the posting of signs with a minimum area of 3 square feet (e.g., 1.5' x 2'). Each sign shall indicate the activities conducted at each site, permit number, and name and contact information, including the Permittee or applicator's telephone number. Signs shall be posted in a clearly visible and conspicuous manner at the entrance to each land application site during a land application event, and for as long as the public access restrictions required under III.13 apply.

The City may choose to implement its public communication and outreach program as established in the EMS manual to satisfy this permit requirement instead of posting of signs at each field.

15. The following **harvesting and grazing** restrictions apply to residual land application sites after each land application event:

<b>Harvesting and Grazing Description</b>	<b>Restricted Duration</b>
Animals shall not be allowed to graze during land application activities and restricted period. Sites that are to be used for grazing shall have fencing to prevent access after each land application event.	30 days
Food crops, feed crops and fiber crops shall not be harvested for:	30 days
Turf grown on land where residuals have been applied shall not be harvested for:	12 months
Food crops with harvested parts that touch the residual/soil mixture and are totally above the land surface (e.g., tobacco, melons, cucumbers, squash, etc.) shall not be harvested for:	14 months
When the residuals remain on the land surface for four months or longer prior to incorporation into the soil, food crops with harvested parts below the land surface (e.g., root crops such as potatoes, carrots, radishes, etc.) shall not be harvested for:	20 months

Harvesting and Grazing Description	Restricted Duration
When the residuals remain on the land surface for less than four months prior to incorporation into the soil, food crops with harvested parts below the land surface shall not be harvested for:	38 months

16. The Permittee shall acquire from each landowner or lessee/operator a statement detailing the volume of other nutrient sources (i.e., manufactured fertilizers, manures, or other animal waste products) that have been applied to the site, and a copy of the most recent Nutrient Management Plan (NMP) for those operations where a NMP is required by the US Department of Agriculture – National Resources Conservation Service (NRCS) or other State Agencies. The Permittee shall calculate allowable nutrient loading rates based on the provided information and use appropriate reductions.

For the purpose of this permit condition, a Crop Management Plan (CMP), Waste Utilization Plan (WUP) or Certified Nutrient Management Plan (CNMP) shall also be considered a Nutrient Management Plan.

17. No residuals shall be land applied unless the submitted Land Owner Agreement Attachment (LOAA) between the Permittee and landowners or lessees/operators of the land application site is in full force and effect. These agreements shall be considered expired concurrent with the permit expiration date, and shall be renewed during the permit renewal process.

18. Reclaimed water irrigation shall be performed only in order to supplement rainfall during dry periods of the year and shall be in accordance with the Approved Spray Irrigation Operation Plan and other supporting data subsequently filed and approved by the Division.

19. Crops onto which reclaimed water is or is planned to be irrigated during the crop growing cycle shall not be used for direct human consumption.

20. The three selected fields as specified in Condition I.4., shall be actively utilized and PAN loading on these fields shall be comparable to the highest residuals loading rates of other utilized fields at the Neuse WWTP site. If the Permittee later decides not to utilize any of the selected fields, a permit modification request to relocate the monitoring station shall be submitted to the Division for approval.

#### IV. MONITORING AND REPORTING REQUIREMENTS

1. Any Division required monitoring (including groundwater, plant tissue, soil and surface water analyses) necessary to ensure groundwater and surface water protection shall be established, and an acceptable sample reporting schedule shall be followed.

2. Residuals shall be analyzed to demonstrate they are non-hazardous under the Resource Conservation and Recovery Act (RCRA). The analyses [**corrosivity, ignitability, reactivity, and toxicity characteristic leaching procedure (TCLP)**] shall be performed at the frequency specified in Attachment A, and the Permittee shall maintain these results for a minimum of five years. Any exceptions from the requirements in this condition shall be specified in Attachment A.

The TCLP analysis shall include the following parameters (the regulatory level in milligrams per liter is in parentheses):

Arsenic (5.0)	1,4-Dichlorobenzene (7.5)	Nitrobenzene (2.0)
Barium (100.0)	1,2-Dichloroethane (0.5)	Pentachlorophenol (100.0)
Benzene (0.5)	1,1-Dichloroethylene (0.7)	Pyridine (5.0)
Cadmium (1.0)	2,4-Dinitrotoluene (0.13)	Selenium (1.0)
Carbon tetrachloride (0.5)	Endrin (0.02)	Silver (5.0)
Chlordane (0.03)	Hexachlorobenzene (0.13)	Tetrachloroethylene (0.7)
Chlorobenzene (100.0)	Heptachlor (and its hydroxide) (0.008)	Toxaphene (0.5)
Chloroform (6.0)	Hexachloro-1,3-butadiene (0.5)	Trichloroethylene (0.5)
Chromium (5.0)	Hexachloroethane (3.0)	2,4,5-Trichlorophenol (400.0)
m-Cresol (200.0)	Lead (5.0)	2,4,6-Trichlorophenol (2.0)
o-Cresol (200.0)	Lindane (0.4)	2,4,5-TP (Silvex) (1.0)
p-Cresol (200.0)	Mercury (0.2)	Vinyl chloride (0.2)
Cresol (200.0)	Methoxychlor (10.0)	
2,4-D (10.0)	Methyl ethyl ketone (200.0)	

Once the residuals have been monitored for two years at the frequency specified in Attachment A, the Permittee may submit a permit modification request to reduce the frequency of this monitoring requirement. In no case shall the monitoring frequency be less than once per permit cycle.

- An analysis shall be conducted on residuals from each source generating facility at the frequency specified in Attachment A, and the Permittee shall maintain the results for a minimum of five years. The analysis shall include the following parameters:

Aluminum	Mercury	Potassium
Ammonia-Nitrogen	Molybdenum	Selenium
Arsenic	Nickel	Sodium
Cadmium	Nitrate-Nitrite Nitrogen	Sodium Adsorption Ratio (SAR)
Calcium	Percent Total Solids	TKN
Copper	pH	Zinc
Lead	Phosphorus	Magnesium
PAN (by calculation)		

- Residuals shall be monitored for compliance with pathogen and vector attraction reduction requirements at the frequency specified in Attachment A, and at the time indicated in the sampling and monitoring sections of the approved O&M plan. The required data shall be specific to the stabilization process utilized, and sufficient to demonstrate compliance with the Class B pathogen reduction requirements in 15A NCAC 02T .1106 (a) and (c), and one vector attraction reduction requirement in 15A NCAC 02T .1107 (a) shall be met. Any exceptions from the requirements in this condition shall be specified in Attachment A.

5. An analysis shall be conducted on reclaimed water generated at the Neuse River WWTP. The analysis shall be performed once a month during those months in which a reclaimed water irrigation event takes place. Note that it shall be acceptable to the Division for the Permittee to submit results of analyses for identical parameters monitored to comply with NPDES Permit No. NC0029033. Results shall be reported on Form NDMR, which shall only be required for those months in which a reclaimed water irrigation event takes place. All results shall be maintained on file by the Permittee for a minimum of five years. The analysis shall include, but shall not necessarily be limited to, the following parameters:

Ammonia-Nitrogen	Mercury	PAN (by calculation)
Arsenic	Molybdenum	Potassium
Cadmium	Nickel	Selenium
Calcium	Nitrate-Nitrite Nitrogen	Sodium
Copper	pH	Total Kjeldahl Nitrogen
Lead	Phosphorus	Zinc
Magnesium		

6. An annual representative soils analysis (i.e., Standard Soil Fertility Analysis) shall be conducted on each land application site listed in Attachment B on which a residuals land application event will occur in the respective calendar year. This analysis shall be in accordance with the “Guidance on Soil Sampling” located in the Sampling Instructions section of the NC Department of Agriculture & Consumer Services’ website (<http://www.ncagr.gov/agronomi/pubs.htm>). The Permittee shall maintain these results and a description of the sampling methodologies used to determine soil fertility for a period of no less than five years, and shall be made available to the Division upon request. At a minimum, the Standard Soil Fertility Analysis shall include the following parameters:

Acidity	Exchangeable Sodium Percentage	Phosphorus
Base Saturation (by calculation)	Magnesium	Potassium
Calcium	Manganese	Sodium
Cation Exchange Capacity	Percent Humic Matter	Zinc
Copper	pH	

The annual soils analysis as well as an analysis for the following pollutants shall be conducted once prior to permit renewal on a sample of soil from each land application site on which residuals have been land applied or reclaimed water has been irrigated during the permit cycle:

Arsenic	Mercury	Nickel
Cadmium	Molybdenum	Selenium
Lead		

As shown in the annual reports, soil samples obtained from several sites demonstrated elevated copper and zinc content. The Permittee shall monitor the concentrations of copper and zinc within the soil matrix of the sites closely. Once the copper or zinc indices of the soil reaches a value of 3,000 (i.e., equivalent to 60 parts per million for copper and 120 parts per million for zinc), the site shall be evaluated by a certified agronomist or a North Carolina-licensed professional soil scientist with respect to maintaining the integrity of soil fertility and crop health and as to the appropriateness of continuing to land apply residuals or reclaimed water. If the evaluation determines that the land application of additional residuals or reclaimed water will adversely affect soil fertility and crop health, the Permittee shall no longer apply residuals or reclaimed water to that site. The Permittee shall notify the Division at permit renewal time if any sites have to be eliminated from this program for the above-described reason.

7. Laboratory parameter analyses shall be performed on the residuals as they are land applied, and shall be in accordance with the monitoring requirements in 15A NCAC 02B .0505.
8. For sites 04-01 through 04-10, a variance has been granted from the setback required by Condition II.12 (downslope interceptor drains, surface water diversions, groundwater drainage systems, and surface drainage ditches) provided that the following surface water monitoring is being conducted at each of the monitoring locations shown on the approved map (one upstream and two downstream).

The monitoring event at each sampling point shall consist of a single grab sample that is analyzed for the following parameters and at the following frequency:

Arsenic	Mercury	Total Phosphorus
Cadmium	Molybdenum	Selenium
Copper	Nickel	Total Organic Carbon
Fecal Coliform	Nitrate-Nitrogen	Zinc
Lead	pH	

- a. Once 30 to 45 calendar days prior to initiating each residuals land application event that is to occur on any of these sites.
- b. Once five to 15 calendar days following the end of each residuals land application event that occurs on any of these sites.
- c. Once 30 to 45 calendar days following the end of each residuals land application event that occurs on any of these sites.

Results of the surface water monitoring program shall be reported on Form NDMR and submitted with the annual report as specified in Condition IV.16. Should surface water not be present in a particular monitoring point during the above-specified monitoring schedule, a Form NDMR shall still be submitted; however, it shall be reported that insufficient water to take the grab sample was present at that time.

After the surface water monitoring program has been conducted for an entire permit cycle, the Permittee may request to remove this monitoring requirement upon renewal of the permit.

9. Monitoring wells shall be sampled at the frequencies and for the parameters specified in Attachment C. All mapping, well construction forms, well abandonment forms and monitoring data shall refer to the permit number and the well nomenclature as provided in Attachment C.
10. For initial sampling of monitoring wells, the Permittee shall submit a Compliance Monitoring Form (GW-59) and a Well Construction Record Form (GW-1) listing this permit number and the appropriate monitoring well identification number. Initial Compliance Monitoring Forms (GW-59) without copies of the Well Construction Record Forms (GW-1) are deemed incomplete, and may be returned to the Permittee without being processed.

11. Two copies of the monitoring well sampling and analysis results shall be submitted on a Compliance Monitoring Form (GW-59), along with attached copies of laboratory analyses, on or before the last working day of the month following the sampling month. The Compliance Monitoring Form (GW-59) shall include this permit number, the appropriate well identification number, and one GW-59a certification form shall be submitted with each set of sampling results. All information shall be submitted to the following address:

Division of Water Quality  
Information Processing Unit  
1617 Mail Service Center  
Raleigh, North Carolina 27699-1617

12. Vadose zone monitoring stations shall be sampled for Nitrate-Nitrogen (NO<sub>3</sub>-N) within 30 days after construction and monthly thereafter. Three copies of the Vadose zone monitoring results including the sampling location identification, shall be submitted on or before the last working day of the month following the sampling month and to the address above (see Condition IV.11).

The Permittee may request a permit modification to reduce the monitoring frequency after sufficient amount of sampling data are collected (i.e. minimum of two years worth of data).

13. The Permittee shall maintain records tracking all residual land application and/or reclaimed water irrigation events. At a minimum, these records shall include the following:

- a. Source of residuals;
- b. Date of land application;
- c. Location of land application (i.e., site, field, or zone number as listed in Attachment B);
- d. Approximate areas applied to (acres);
- e. Method of land application;
- f. Weather conditions (e.g., sunny, cloudy, raining, etc.);
- g. Predominant Soil Mapping Unit (e.g., CbB2);
- h. Soil conditions (e.g., dry, wet, frozen, etc.);
- i. Type of crop or crops to be grown on field;
- j. Nitrogen Application Rate based on RYEs (if using data obtained from the North Carolina State University Department of Soil Science Website, the printout page shall be kept on file);
- k. Volume of residuals land applied in gallons per acre, cubic yard per acre, dry tons per acre, or wet ton per acre;
- l. Volume of animal waste or other nutrient source applied in gallons per acre, dry ton per acre, or wet tons per acre;
- m. Volume of soil amendments (e.g., lime, gypsum, etc.) applied in gallons per acre, dry ton per acre, or wet tons per acre; and
- n. Annual and cumulative totals in dry tons per acre of residuals as well as animal waste and other sources of nutrients (e.g., if applicable), annual and cumulative pounds per acre of each heavy metal (e.g., shall include, but shall not be limited to, arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc), annual pounds per acre of PAN, and annual pounds per acre of phosphorus applied to each field.

14. The Permittee shall maintain records tracking residuals produced by all residuals source-generating facilities listed in the most recently-certified Attachment A of this permit:
  - i. Monthly and annual totals of dry tons of residuals requiring utilization/disposal;
  - ii. Monthly and annual totals of dry tons of residuals land applied as a Class B product, with an accounting of residuals land applied on all land application sites listed in the most recently-certified Attachment B of this permit and residuals land applied under the conditions of other permits as approved by the Division;
  - iii. Monthly and annual totals of dry tons of residuals produced and distributed as a Class A EQ product as approved by the Division in the most recent issuance of Permit No. WQ0011583, with an accounting of the volumes of residuals, amendments added, and total product produced/distributed;
  - iv. Monthly and annual totals of dry tons of residuals hauled for production and distribution as a Class A EQ product under the conditions of other permits as approved by the Division or the Division of Waste Management; and
  - v. Monthly and annual totals of dry tons of residuals disposed of in a landfill.
15. For reclaimed water irrigation events only (i.e., provide a completed Form NDAR-3 for each month of the calendar year, regardless of whether or not an event has occurred during a particular month):
  - i. Source of reclaimed water;
  - ii. Date of irrigation;
  - iii. Location of irrigation (i.e., site, field, or zone number);
  - iv. Weather conditions (i.e., sunny, cloudy, raining, etc.);
  - v. Maintenance of cover crops;
  - vi. Length of time site/field/zone is irrigated;
  - vii. Volume of reclaimed water irrigated; and
  - viii. Continuous weekly, monthly, and year-to-date hydraulic (i.e. in inches per acre) loadings for each site/ field/zone
16. Three copies of an annual report shall be submitted on or before March 1<sup>st</sup>. The annual report shall meet the requirements described in the Instructions for Residuals Application Annual Reporting Forms and all other annual reporting requirements in this permit. Instructions for reporting and annual report forms are available at <http://portal.ncdenr.org/web/wq/aps/lau/reporting>, or can be obtained by contacting the Land Application Unit directly. The annual report shall be submitted to the following address:

Division of Water Quality  
Information Processing Unit  
1617 Mail Service Center  
Raleigh, North Carolina 27699-1617

#### 17. **Noncompliance Notification**

The Permittee shall report by telephone to the Raleigh Regional Office, telephone number (919) 791-4200, as soon as possible, but in no case more than 24 hours or on the next working day following the occurrence or first knowledge of the occurrence of any of the following:

- a. Any occurrence with the land application program resulting in the land application of significant amounts of wastes that are abnormal in quantity or characteristic.
- b. Any failure of the land application program resulting in a release of material to surface waters.

- c. Any time self-monitoring indicates the facility has gone out of compliance with its permit limitations.
- d. Any process unit failure, due to known or unknown reasons, rendering the facility incapable of adequate residual treatment.
- e. Any spill or discharge from a vehicle or piping system during residuals transportation.

Any emergency requiring immediate reporting (e.g., discharges to surface waters, imminent failure of a storage structure, etc.) outside normal business hours shall be reported to the Division's Emergency Response personnel at telephone number (800) 662-7956, (800) 858-0368, or (919) 733-3300. Persons reporting such occurrences by telephone shall also file a written report in letter form within five days following first knowledge of the occurrence. This report shall outline the actions taken or proposed to be taken to ensure that the problem does not recur.

## **V. INSPECTIONS**

1. The Permittee shall provide adequate inspection and maintenance to ensure proper operation of the subject facilities and shall be in accordance with the approved O&M Plan.
2. Prior to each bulk residuals land application or reclaimed water irrigation event, the Permittee or his designee shall inspect the residuals storage, transport, application facilities and/or reclaimed water irrigation facilities as appropriate to prevent malfunctions, facility deterioration and operator errors resulting in discharges, which may cause the release of wastes to the environment, a threat to human health or a public nuisance. The Permittee shall maintain an inspection log that includes, at a minimum, the date and time of inspection, observations made, and any maintenance, repairs, or corrective actions taken. The Permittee shall maintain this inspection log for a period of five years from the date of inspection, and this log shall be made available to the Division upon request.
3. Any duly authorized Division representative may, upon presentation of credentials, enter and inspect any property, premises or place on or related to the land application sites or facilities permitted herein at any reasonable time for the purpose of determining compliance with this permit; may inspect or copy any records required to be maintained under the terms and conditions of this permit; and may collect groundwater, surface water or leachate samples.

## **VI. GENERAL CONDITIONS**

1. Failure to comply with the conditions and limitations contained herein may subject the Permittee to an enforcement action by the Division in accordance with North Carolina General Statutes 143-215.6A to 143-215.6C.
2. This permit shall become voidable if the residuals land application or reclaimed water irrigation events are not carried out in accordance with the conditions of this permit.
3. This permit is effective only with respect to the nature and volume of residuals and reclaimed water described in the permit application and other supporting documentation.
4. The issuance of this permit does not exempt the Permittee from complying with any and all statutes, rules, regulations, or ordinances, which may be imposed by other jurisdictional government agencies (e.g., local, state, and federal). Of particular concern to the Division are applicable river buffer rules in 15A NCAC 02B .0200; erosion and sedimentation control requirements in 15A NCAC Chapter 4 and under the Division's General Permit NCG010000; any requirements pertaining to wetlands under 15A NCAC 02B .0200 and 02H .0500; and documentation of compliance with Article 21 Part 6 of Chapter 143 of the General Statutes.

5. In the event the land application program changes ownership or the Permittee changes their name, a formal permit modification request shall be submitted to the Division. This request shall be made on official Division forms, and shall include appropriate documentation from the parties involved and other supporting documentation as necessary. The Permittee of record shall remain fully responsible for maintaining and operating the land application program permitted herein until a permit is issued to the new owner.
6. The Permittee shall retain a set of Division approved plans and specifications for the life of the facilities permitted herein.
7. This permit is subject to revocation or unilateral modification upon 60 days notice from the Division Director, in whole or part for any of the reasons listed in 15A NCAC 02T .0110.
8. Unless the Division Director grants a variance, expansion of the permitted land application program contained herein shall not be granted if the Permittee exemplifies any of the criteria in 15A NCAC 02T .0120(b).
9. The Permittee shall pay the annual fee within 30 days after being billed by the Division. Failure to pay the annual fee accordingly shall be cause for the Division to revoke this permit pursuant to 15A NCAC 02T .0105(e)(3).

Permit issued this the # day of MONTH YEAR

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

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Charles Wakild, P. E., Director  
Division of Water Quality  
By Authority of the Environmental Management Commission

**Permit Number WQ0001730**

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Owner	Facility Name	County	Permit Number	Biological Residuals	Maximum Dry Tons Per Year <sup>1</sup>	Monitoring Frequency for Non-hazardous Characteristics <sup>2</sup>	Monitoring Frequency for Metals and Nutrients <sup>3,5</sup>	Monitoring Frequency for Pathogen & Vector Attraction Reductions <sup>4,5</sup>	Approved Mineralization Rate
City of Raleigh	Neuse River WWTP			Yes	7,000	Annually	See Table Below	See Table Below	0.30
<b>Total</b>					<b>7,000</b>				

Footnotes:

1. The maximum volume of residuals permitted for land application under this permit includes as approximate 15 dry tons per year emergency-only contribution from Ajinomoto USA, Inc. (Industrial User Permit No. AJINCFR439) which generates residuals from the treatment of industrial wastewater only (i.e. no domestic wastewater content). Ajinomoto USA Inc.'s residuals shall be introduced to the residuals holding tanks at the Neuse River WWTP prior to land application under the conditions of this permit.
2. Analyses to demonstrate that residuals are non-hazardous (i.e., TCLP, ignitability, reactivity, and corrosivity) as stipulated under permit Condition IV.2.
3. Testing of metals and nutrients as stipulated under permit Condition IV.3.
4. Analyses of pathogen and vector attraction reductions as stipulated under permit Condition IV.4.
5. Monitoring frequencies are based on the actual dry tons applied per year using the table below, unless specified above.

Dry Tons Generated (short tons per year)	Monitoring Frequency (Established in 40 CFR 503 and 15A NCAC 02T .1111)
<319	1/Year
=>319 - <1,650	1/ Quarter (4 times per year)
=>1,650 - <16,500	1/60 Days (6 times per year)
=>16,500	1/month (12 times per year)

If no land application events occur during a required sampling period (e.g. no land application occur during an entire year when annual monitoring is required), then no sampling data is required during the period of inactivity. The annual report shall include an explanation for missing sampling data. Those required to submit the annual report to EPA may be required to make up the missed sampling, contact the EPA for additional information and clarification.

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ATTACHMENT B - Approved Land Application Sites

Certification Date: MM DD, YYYY

City of Raleigh

Permit Number: WQ0001730 Version: 2.6

Field/ Site	Owner	Lessee	County	Latitude	Longitude	Net Acreage	Dominant Soil Series	Footnotes
01-01	Hobbs, Delmas		Duplin	35°04'48"	78°06'42"	42.50	Wagram	
01-02	Hobbs, Delmas		Duplin	35°06'42"	78°07'55"	35.50	Norfolk	a
01-03	Hobbs, Delmas		Duplin	35°07'59"	78°07'46"	40.60	Norfolk	
02-01	Bradshaw, Clyde	Bass, Trent	Duplin	35°06'29"	78°07'46"	76.40	Norfolk	
04-01	J. Isaac Gurley Farms, Inc.		Duplin	35°05'36"	78°10'04"	75.50	Rains	b
04-02	J. Isaac Gurley Farms, Inc.		Duplin	35°05'02"	78°09'59"	103.80	Rains	b
04-03	J. Isaac Gurley Farms, Inc.		Duplin	35°05'35"	78°09'40"	46.50	Goldsboro	b
04-04	J. Isaac Gurley Farms, Inc.		Duplin	35°05'21"	78°09'27"	85.60	Lenoir	b
04-05	J. Isaac Gurley Farms, Inc.		Duplin	35°05'07"	78°09'45"	22.80	Lynchburg	b
04-06	J. Isaac Gurley Farms, Inc.		Duplin	35°05'07"	78°09'18"	38.50	Goldsboro	b
04-07	J. Isaac Gurley Farms, Inc.		Duplin	35°05'05"	78°09'01"	19.10	Coxville	b
04-08	J. Isaac Gurley Farms, Inc.		Duplin	35°05'16"	78°08'58"	29.90	Foreston	b
04-09	J. Isaac Gurley Farms, Inc.		Duplin	35°05'30"	78°09'04"	52.20	Rains	b
04-10	J. Isaac Gurley Farms, Inc.		Duplin	35°05'42"	78°09'20"	25.40	Coxville	b
04-11	J. Isaac Gurley Farms, Inc.		Duplin	35°04'49"	78°08'28"	22.10	Coxville	
04-12	J. Isaac Gurley Farms, Inc.		Duplin	35°05'33"	78°08'27"	47.70	Coxville	
		<b>Total for County</b>	<b>Duplin</b>			<b>764.10</b>		
HG-1	Gay, Edith J		Franklin	35°54'40"	78°18'04"	24.04	Varina	
HG-2	Gay, Hillard J		Franklin	35°54'44"	78°18'04"	5.22	Varina	
HG-3	Gay, Edith J		Franklin	35°54'39"	78°18'15"	6.28	Wedowee	
HG-4	Gay, Edith J		Franklin	35°54'35"	78°18'07"	1.34	Varina	
HG-5	Gay, Edith J		Franklin	35°54'33"	78°18'10"	4.38	Varina	
HG-6	Gay, Edith J		Franklin	35°54'32"	78°18'23"	4.57	Wedowee	
		<b>Total for County</b>	<b>Franklin</b>			<b>45.83</b>		

ATTACHMENT B - Approved Land Application Sites

Certification Date: MM DD, YYYY

City of Raleigh

Permit Number: WQ0001730 Version: 2.6

Field/ Site	Owner	Lessee	County	Latitude	Longitude	Net Acreage	Dominant Soil Series	Footnotes
JEJ-01	White, Syndor M		Johnston	35°41'45"	78°26'49"	10.96	Wedowee	
JEJ-02	White, Syndor M		Johnston	35°41'33"	78°26'44"	10.16	Vance	
JEJ-03	White, Syndor M		Johnston	35°41'31"	78°27'03"	27.37	Vance	
JEJ-04	White, Syndor M		Johnston	35°41'38"	78°27'22"	24.61	Vance	
		<b>Total for County</b>	<b>Johnston</b>			<b>73.10</b>		
01-07	Hobbs, Delmas		Sampson	35°06'21"	78°12'49"	29.90	Norfolk	
01-08A	Hobbs, Delmas		Sampson	35°06'27"	78°13'03"	19.10	Goldsboro	
01-08B	Hobbs, Delmas		Sampson	35°06'30"	78°13'00"	6.10	Lynchburg	
01-09	Hobbs, Delmas		Sampson	35°05'05"	78°13'28"	52.50	Norfolk	
01-10	Hobbs, Kevin		Sampson	35°04'41"	78°11'32"	17.70	Norfolk	
01-11	Hobbs, Delmas		Sampson	35°04'02"	78°12'34"	12.00	Wagram	
01-12	Hobbs, Delmas		Sampson	35°03'49"	78°12'40"	30.80	Blanton	
01-13	Hobbs, Delmas		Sampson	35°03'56"	78°12'21"	38.10	Kenansville	
01-14	Hobbs, Delmas		Sampson	35°03'51"	78°12'13"	7.30	Norfolk	
01-15	Hobbs, Delmas		Sampson	35°03'39"	78°10'32"	39.50	Goldsboro	
01-17	Hobbs, Delmas		Sampson	35°03'01"	78°10'29"	22.20	Wagram	
01-18	Hobbs, Kevin		Sampson	35°03'21"	78°11'55"	23.30	Goldsboro	
01-19	Hobbs, Kevin		Sampson	35°03'30"	78°11'56"	25.40	Goldsboro	
01-20	Hobbs, Kevin		Sampson	35°02'30"	78°12'06"	39.50	Norfolk	
03-01	Hill, Violet L	Bass, Trent	Sampson	35°15'08"	78°18'17"	23.80	Lynchburg	
		<b>Total for County</b>	<b>Sampson</b>			<b>387.20</b>		
NDS-1	Sauls, Normant D		Wake	35°40'10"	78°33'46"	4.19	Appling	
NDS-2	Sauls, Normant D		Wake	35°40'11"	78°33'39"	13.86	Appling	
NDS-3	Sauls, Normant D		Wake	35°40'29"	78°33'41"	18.06	Appling	

ATTACHMENT B - Approved Land Application Sites

Certification Date: MM DD, YYYY

City of Raleigh

Permit Number: WQ0001730 Version: 2.6

Field/ Site	Owner	Lessee	County	Latitude	Longitude	Net Acreage	Dominant Soil Series	Footnotes
NR-004	City Of Raleigh		Wake	35°43'09"	78°30'01"	7.60	Appling	c
NR-005	City Of Raleigh		Wake	35°43'23"	78°30'03"	1.92	Appling	g
NR-006	City Of Raleigh		Wake	35°43'23"	78°29'52"	2.86	Appling	g
NR-007	City Of Raleigh		Wake	35°43'00"	78°29'52"	9.25	Durham	g
NR-008	City Of Raleigh		Wake	35°43'42"	78°29'42"	24.52	Wedowee	d, g
NR-009	City Of Raleigh		Wake	35°43'04"	78°29'35"	8.39	Wedowee	d, g
NR-010	City Of Raleigh		Wake	35°43'11"	78°29'30"	10.47	Wedowee	d, g
NR-011	City Of Raleigh		Wake	35°43'18"	78°29'42"	3.68	Wedowee	g
NR-012	City Of Raleigh		Wake	35°43'26"	78°29'46"	4.93	Altavista	g
NR-013	City Of Raleigh		Wake	35°43'20"	78°29'34"	6.60	Wedowee	c
NR-014	City Of Raleigh		Wake	35°43'10"	78°29'28"	5.77	Wedowee	d, g
NR-015	City Of Raleigh		Wake	35°43'09"	78°29'23"	0.00		c
NR-016	City Of Raleigh		Wake	35°43'20"	78°29'26"	13.90	Wake	c
NR-017	City Of Raleigh		Wake	35°43'22"	78°29'14"	5.20	Wedowee	c
NR-018	City Of Raleigh		Wake	35°43'26"	78°29'06"	3.00	Louisburg	c
NR-019	City Of Raleigh		Wake	35°43'25"	78°28'55"	9.30	Appling	c
NR-020	City Of Raleigh		Wake	35°43'20"	78°28'43"	11.10	Chewacla	c
NR-021	City Of Raleigh		Wake	35°43'18"	78°28'53"	8.80	Appling	c
NR-022	City Of Raleigh		Wake	35°43'11"	78°28'56"	8.80	Appling	c
NR-023	City Of Raleigh		Wake	35°43'22"	78°28'59"	4.63	Wedowee	g
NR-025	City Of Raleigh		Wake	35°42'54"	78°28'59"	5.50	Colfax	c
NR-026	City Of Raleigh		Wake	35°42'44"	78°29'06"	2.90	Colfax	c
NR-027	City Of Raleigh		Wake	35°42'55"	78°29'06"	7.30	Wedowee	c, d
NR-028	City Of Raleigh		Wake	35°42'50"	78°29'12"	16.96	Appling	d, g

**ATTACHMENT B - Approved Land Application Sites**

**Certification Date: MM DD, YYYY**

**City of Raleigh**

**Permit Number: WQ0001730 Version: 2.6**

Field/ Site	Owner	Lessee	County	Latitude	Longitude	Net Acreage	Dominant Soil Series	Footnotes
NR-029	City Of Raleigh		Wake	35°43'02"	78°29'02"	6.13	Wedowee	d, g
NR-030	City Of Raleigh		Wake	35°42'50"	78°29'30"	18.51	Wedowee	d, g
NR-031	City Of Raleigh		Wake	35°42'54"	78°29'37"	24.64	Wedowee	d, g
NR-032	City Of Raleigh		Wake	35°42'44"	78°29'21"	8.14	Appling	d, g
NR-033	City Of Raleigh		Wake	35°42'46"	78°29'41"	10.66	Louisburg	d, g
NR-034	City Of Raleigh		Wake	35°42'43"	78°29'38"	7.33	Louisburg	d, g
NR-035	City Of Raleigh		Wake	35°42'37"	78°29'27"	8.27	Wedowee	d, g
NR-036	City Of Raleigh		Wake	35°42'38"	78°29'38"	8.20	Louisburg	d, g
NR-037	City Of Raleigh		Wake	35°42'48"	78°29'48"	9.32	Louisburg	d, g
NR-038	City Of Raleigh		Wake	35°42'46"	78°29'54"	10.06	Wedowee	d, g
NR-039	City Of Raleigh		Wake	35°42'49"	78°29'57"	15.00	Wedowee	c
NR-040	City Of Raleigh		Wake	35°42'49"	78°30'03"	7.30	Wedowee	c
NR-041	City Of Raleigh		Wake	35°42'51"	78°30'10"	25.60	Wedowee	c
NR-042	City Of Raleigh		Wake	35°42'49"	78°30'30"	0.00	Appling	c, f
NR-043	City Of Raleigh		Wake	35°42'29"	78°29'39"	9.26	Louisburg	d, g
NR-044	City Of Raleigh		Wake	35°42'20"	78°29'41"	13.92	Appling	d, g
NR-045	City Of Raleigh		Wake	35°42'10"	78°29'42"	6.46	Appling	d, g
NR-046	City Of Raleigh		Wake	35°42'26"	78°29'27"	10.52	Wedowee	d, g
NR-047	City Of Raleigh		Wake	35°42'33"	78°29'15"	6.19	Wedowee	g
NR-048	City Of Raleigh		Wake	35°42'24"	78°29'17"	15.30	Wedowee	g
NR-049	City Of Raleigh		Wake	35°42'09"	78°29'09"	10.00	Appling	c
NR-050	City Of Raleigh		Wake	35°42'06"	78°30'00"	9.40	Wedowee	c
NR-060	City Of Raleigh		Wake	35°42'16"	78°28'32"	20.93	Chewacla	c
NR-061	City Of Raleigh		Wake	35°42'25"	78°28'23"	45.70	Wagram	c

**ATTACHMENT B - Approved Land Application Sites**

**Certification Date: MM DD, YYYY**

**City of Raleigh**

**Permit Number: WQ0001730 Version: 2.6**

Field/ Site	Owner	Lessee	County	Latitude	Longitude	Net Acreage	Dominant Soil Series	Footnotes
NR-062	City Of Raleigh		Wake	35°42'23"	78°28'41"	7.91	Altavista	g
NR-063	City Of Raleigh		Wake	35°42'23"	78°28'56"	8.59	Altavista	g
NR-070	City Of Raleigh		Wake	35°42'13"	78°29'54"	19.74	Vance	d, g
NR-071	City Of Raleigh		Wake	35°42'06"	78°30'07"	3.05	Appling	g
NR-072	City Of Raleigh		Wake	35°42'07"	78°29'50"	4.36	Appling	c
NR-073	City Of Raleigh		Wake	35°41'59"	78°29'51"	3.37	Appling	g
NR-074	City Of Raleigh		Wake	35°41'48"	78°30'08"	7.80	Louisburg	c
NR-075	City Of Raleigh		Wake	35°41'53"	78°29'55"	46.10	Norfolk	c
NR-100	Material Recovery L L C		Wake	35°42'40"	78°30'24"	0.00		e
NR-101	Material Recovery L L C		Wake	35°42'33"	78°30'07"	0.00		e
NR-102	Material Recovery L L C		Wake	35°42'38"	78°30'02"	0.00		e
NR-200	City Of Raleigh		Wake	35°41'51"	78°29'18"	14.00	Wagram	c
NR-201	City Of Raleigh		Wake	35°41'50"	78°29'06"	5.80	Appling	c
NR-500	City of Raleigh		Wake	35°41'54"	78°28'60"	27.00	Appling	c
NR-501	City Of Raleigh		Wake	35°42'03"	78°29'31"	5.82	Durham	g
NR-502	City Of Raleigh		Wake	35°41'58"	78°29'25"	11.80	Wedowee	c
NR-503	City Of Raleigh		Wake	35°41'46"	78°29'26"	20.00	Durham	c
NR-511	City Of Raleigh		Wake	35°42'18"	78°29'30"	13.72	Appling	g
NR-519	City Of Raleigh		Wake	35°42'29"	78°29'54"	11.26	Appling	d, g
NR-520	City Of Raleigh		Wake	35°42'20"	78°30'03"	5.43	Appling	d, g
NR-524	Material Recovery L L C		Wake	35°42'24"	78°30'06"	0.00		e
NR-600	City Of Raleigh		Wake	35°41'38"	78°29'39"	5.10	Wedowee	c
NR-601	City Of Raleigh		Wake	35°41'51"	78°29'42"	12.10	Appling	c
NR-602	City Of Raleigh		Wake	35°42'00"	78°29'41"	9.04	Durham	g

**ATTACHMENT B - Approved Land Application Sites**

**Certification Date: MM DD, YYYY**

**City of Raleigh**

**Permit Number: WQ0001730 Version: 2.6**

Field/ Site	Owner	Lessee	County	Latitude	Longitude	Net Acreage	Dominant Soil Series	Footnotes
		<i>Total for County</i>	<i>Wake</i>			768.32		
<b>Total</b>						<b>2,038.55</b>		

Footnotes:

<sup>a</sup> This land application site has a 17.20-net acre tobacco allotment area associated with it, in which the landowner plants 3.00-net acres in tobacco each year. The area cropped may vary within the total tobacco allotment area. This entire site, subtracting out required setbacks/buffers, shall be approved for residuals land application; however, only a maximum of 35.50 net acres of area (i.e., the total applicable area minus the area cropped in tobacco) may be applied to in any given year. If residuals are land applied to this site during the calendar year, the Permittee shall submit a buffer map that depicts exactly which 35.50 net acres of this site have received residuals with the annual report that is required by Condition IV. 16.

<sup>b</sup> A variance from the setback to interceptor drains, surface water diversions, groundwater drainage systems, and surface drainage ditches has been granted for this land application site. This variance shall be allowed as long as strict compliance with Condition IV.8. is maintained. The upstream and downstream surface water shall be monitored and sampled at the location provided in Figure 1.

<sup>c</sup> Land application of residuals (i.e., both Class B and Class A EQ products) on this land application site shall be strictly prohibited until such time that a permit modification to remove the prohibition has been granted by the Division. Note that a modification to allow land application of residuals on this site shall not be issued until documentation can be made to the satisfaction of the Division that the land application activities will not cause or contribute to violations of water and groundwater quality standards.

<sup>d</sup> This land application site is approved for irrigation of reclaimed water.

<sup>e</sup> It is the Division's understanding that this land application site has been sold by Mr. Ashley Turner to Material Recovery, L.L.C. for the development of a construction and demolition landfill. Therefore, this site is no longer available for residuals land application. However, the Division shall retain this site in the permit until such time that all exceedances of the groundwater quality standards associated with it have been resolved to the satisfaction of the Division.

<sup>f</sup> This field has been deactivated as a field in this permit for the application of residuals and shall be used for the golf course industry as a test site for the application of reclaimed water.

<sup>g</sup> This field is approved for resumption of residuals land application as part of a **DATE** 2013 permit modification. This land application site is a dedicated site and subject to compliance with Condition II.17. Note that the net acreage on this field is changed to reflect the proposed re-application area and not the actual total field area.

City of Raleigh

Monitoring wells: MW-13(R), MW-20, MW-22(R), MW-41, MW-42A(R), MW-44(R), MW-45, MW-46, MW-47, MW-48, MW-49, MW-50, MW-51(R), MW-52(R), MW-53(R), and MW-54(R)

GROUNDWATER CHARACTERISTICS		GROUNDWATER STANDARDS		MONITORING REQUIREMENTS		
PCS Code	Parameter Description	Daily Maximum		Frequency Measurement	Sample Type	Footnotes
82546	Water level, distance from measuring point		ft	3 X year	Calculated	1, 2, 3
00400	pH	6.5 - 8.5	su	3 X year	Grab	1, 2
31616	Coliform, Fecal MF, M-FC Broth,44.5C		#/100 ml	3 X year	Grab	1
70300	Solids, Total Dissolved- 180 Deg.C	500	mg/l	3 X year	Grab	1
00680	Carbon, Tot Organic (TOC)		mg/l	3 X year	Grab	1, 6
00940	Chloride (as Cl)	250	mg/l	3 X year	Grab	1
01002	Arsenic, Total (as As)	10	µg/l	3 X year	Grab	1
00610	Nitrogen, Ammonia Total (as N)	1,500	µg/l	3 X year	Grab	1
00620	Nitrogen, Nitrate Total (as N)	10	mg/l	3 X year	Grab	1
01027	Cadmium, Total (as Cd)	2.0	µg/l	3 X year	Grab	1
01042	Copper, Total (as Cu)	1.0	mg/l	3 X year	Grab	1
71900	Mercury, Total (as Hg)	1.0	µg/l	3 X year	Grab	1
01067	Nickel, Total (as Ni)	100	µg/l	3 X year	Grab	1
01051	Lead, Total (as Pb)	15	µg/l	3 X year	Grab	1
01092	Zinc, Total (as Zn)	1.0	mg/l	3 X year	Grab	1
01062	Molybdenum, Total (as Mo)		mg/l	3 X year	Grab	1
01147	Selenium, Total (as Se)	20	µg/l	3 X year	Grab	1
78732	Volatile Compounds, (GC/MS)		mg/l	Annually	Grab	1, 4, 5

Footnotes:

1. 3 x Year monitoring shall be conducted in March, July & November; Annual monitoring shall be conducted every November.
2. The measurement of water levels shall be made prior to purging the wells. The depth to water in each well shall be measured from the surveyed point on the top of the casing. The measurement of pH shall be made after purging and prior to sampling for the remaining parameters.
3. The measuring points (top of well casing) of all monitoring wells shall be surveyed to provide the relative elevation of the measuring point for each monitoring well. The measuring points (top of casing) of all monitoring wells shall be surveyed relative to a common datum.

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Footnotes (continue):

4. Volatile Organic Compounds (VOC) - In November only, analyze by one of the following methods:
  - a. Standard Method 6230D, PQL at 0.5 µg/L or less
  - b. Standard Method 6210D, PQL at 0.5 µg/L or less
  - c. EPA Method 8021, Low Concentration, PQL at 0.5 µg/L or less
  - d. EPA Method 8260, Low Concentration, PQL at 0.5 µg/L or less
  - e. Another method with prior approval by the Aquifer Protection Section ChiefAny method used must meet the following qualifications:
  - a. A laboratory must be DWQ certified to run any method used.
  - b. The method used must, at a minimum, include all the constituents listed in Table VIII of Standard Method 6230D.
  - c. The method used must provide a PQL of 0.5 µg/L or less that must be supported by laboratory proficiency studies as required by the DWQ Laboratory Certification Unit. Any constituents detected above the MDL but below the PQL of 0.5 µg/L must be qualified (estimated) and reported.
5. If any volatile organic compounds (VOC) are detected as a result of monitoring as provided in Attachment C, then the Raleigh Regional Office Aquifer Protection Supervisor, telephone number (919) 791-4200, must be contacted immediately for further instructions regarding any additional follow-up analyses required.
6. If TOC concentrations greater than 10 mg/l are detected in any downgradient monitoring well, additional sampling and analysis must be conducted to identify the individual constituents comprising this TOC concentration. If the TOC concentration as measured in the background monitor well exceeds 10 mg/l, this concentration will be taken to represent the naturally occurring TOC concentration. Any exceedances of this naturally occurring TOC concentration in the downgradient wells shall be subject to the additional sampling and analysis as described above.