

**REGULATIONS GOVERNING THE INVESTIGATION
AND MITIGATION OF WELL INTERFERENCE**

ADOPTED August 27, 2009

**WAKE COUNTY DEPARTMENT OF ENVIRONMENTAL
SERVICES
RALEIGH, NORTH CAROLINA**

**REGULATIONS GOVERNING
THE INVESTIGATION AND MITIGATION OF WELL INTERFERENCE**

WHEREAS, THE WAKE COUNTY HUMAN SERVICES AND ENVIRONMENTAL SERVICES BOARD HAS THE RESPONSIBILITY TO PROTECT AND PROMOTE THE PUBLIC'S HEALTH; AND

WHEREAS, THE NORTH CAROLINA COMMISSION FOR HEALTH SERVICES' REGULATIONS GOVERNING PUBLIC WATER SUPPLY WELLS DO NOT CONSIDER LOCALIZED IMPACTS TO GROUNDWATER SUSTAINABILITY.

WHEREAS, THE WAKE COUNTY HUMAN SERVICES AND ENVIRONMENTAL SERVICES BOARD RECOGNIZES THAT LOCALIZED COMPETITION FOR GROUNDWATER EXISTS IN WAKE COUNTY AND THIS COMPETITION MAY IMPACT THE ABILITY OF PRIVATE WELLS TO SUPPORT MINIMUM RESIDENTIAL DOMESTIC WATER DEMANDS; AND

WHEREAS, THE WAKE COUNTY HUMAN SERVICES AND ENVIRONMENTAL SERVICES BOARD RECOGNIZES THAT REGIONAL COMPETITION FOR GROUNDWATER IS ALREADY OCCURRING IN NORTHERN WAKE COUNTY IN THE FALLS LAKE WATERSHED, IMPACTING PRIVATE WELLS IN THE NORWOOD OAKS AND BAYLEAF TRAILS SUBDIVISIONS AND SURROUNDING AREAS, AND

WHEREAS, THE WAKE COUNTY HUMAN SERVICES AND ENVIRONMENTAL SERVICES BOARD BELIEVES THAT LOCAL CONDITIONS EXIST IN WAKE COUNTY THAT NECESSITATE IMPOSING MINIMUM STANDARDS IN CERTAIN INSTANCES IN ORDER TO REASONABLY INSURE THAT THE GROUNDWATER RESOURCE IS ADEQUATE FOR DOMESTIC USE FROM BOTH PRIVATE AND SEMI-PUBLIC WELL WATER SUPPLIES; AND

WHEREAS, THE WAKE COUNTY HUMAN SERVICES AND ENVIRONMENTAL SERVICES BOARD RECOGNIZES THE IMPORTANCE OF ADOPTING RULES AND REGULATIONS (NOT INCONSISTENT WITH LAWS AND RULES PROMULGATED BY THE GENERAL ASSEMBLY, THE COMMISSION FOR HEALTH SERVICES OR THE ENVIRONMENTAL MANAGEMENT COMMISSION) AS ARE NECESSARY TO PROTECT AND PROMOTE THE PUBLIC HEALTH OF THE CITIZENS OF WAKE COUNTY.

NOW, THEREFORE, BE IT RESOLVED THAT THE FOLLOWING REGULATIONS ARE ADOPTED BY THE WAKE COUNTY HUMAN SERVICES AND ENVIRONMENTAL SERVICES BOARD PURSUANT TO AUTHORITY CONTAINED IN CHAPTER 130A, ARTICLE 2, SECTIONS 39(b) AND 43 (b) AND SHALL APPLY TO PRIVATE, SEMI-PUBLIC AND PUBLIC WELL SYSTEMS AS DEFINED IN THESE REGULATIONS.

BE IT FURTHER RESOLVED, THAT ON THE DATE OF ADOPTION, THE WAKE COUNTY HUMAN SERVICES AND ENVIRONMENTAL SERVICES BOARD DIRECTS WAKE COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES TO DEVELOP NECESSARY PROCEDURES FOR ENFORCING THE PROVISIONS OF THE REGULATIONS AND INITIATE THESE PROCEDURES ON THE EFFECTIVE DATE.

TABLE OF CONTENTS

SECTION		PAGE
I	GENERAL PROVISIONS	5
II	DEFINITIONS	6
III	APPLICABILITY	7
IV	REGISTRATION REQUIREMENTS	9
V	NOTIFICATION REQUIREMENTS	10
VI	INVESTIGATION REQUIREMENTS	10
VII	MITIGATION REQUIREMENTS	13
VIII	ENFORCEMENT AND PENALTIES	14
IX	INJUNCTIONS	14
X	APPEALS PROCEDURE	14
XI	SEVERABILITY	14
XII	REQUIRED ORDINANCE REVIEW	14
XIII	EFFECTIVE DATE	15

SECTION I: GENERAL PROVISIONS

AUTHORIZATION. The Wake County Human Services and Environmental Services Board is authorized under the provisions of Chapter 130A-39 and 43 of the General Statutes of North Carolina to adopt appropriate rules and regulations for the protection of the public health. The Wake County Board of Human Services is also authorized under provisions of Chapter 87-96 and Chapter 87-97, of the General Statutes of North Carolina to adopt by reference rules adopted by the Environmental Management Commission and more stringent rules for the protection of public health.

PURPOSE. These regulations are established to promote groundwater sustainability and public health by addressing citizen complaints related to well interference and degraded water quality and quantity in private and semi-public wells.

SCOPE. These rules apply to all existing, new or modified wells constructed and operated within the jurisdiction of Wake County, including the municipal jurisdictions and their territories. The well Owner or Agent shall be responsible for complying with any and all provisions of applicable laws, rules, and regulations governing well construction in addition to complying with these regulations.

CONFLICT WITH OTHER LAWS AND REGULATIONS. The provisions of any federal, state, or municipal law or regulation establishing standards affording greater protection to the public welfare, safety, health and the groundwater resources shall prevail within the jurisdiction of such agency or municipality over standards established by these regulations.

RIGHT OF ENTRY. The Department shall have the right of entry upon the premises of any place where entry is necessary to enforce the provisions of this Ordinance per North Carolina General Statute (N.C.G.S.) 130A-17.

ABATEMENT OF PUBLIC HEALTH NUISANCE. Any well which has been determined to be the source of well interference to adjacent water supply wells may be deemed or declared a public health nuisance per N.C.G.S. 130A-19. If the Local Health Director determines that a public health nuisance exists, the Local Health Director may issue an order of abatement directing the owner, lessee, operator or other person in control of the property to take any action necessary to abate the public health nuisance. If the person refuses to comply with the order, the Local Health Director may institute an action in the superior court of the county where the public health nuisance exists to enforce the order, or utilize any remedy available under G.S. 130A.

SECTION II: DEFINITIONS

COMMUNITY WATER SYSTEM means a public water supply system that serves fifteen or more service connections or which regularly serves at least twenty-five year round residents.

DEGRADED WELL means a private or semi-public well which has experienced degradation in water quality or reduction in well yield such that the well cannot effectively support human consumption or basic sanitation requirements.

DEPARTMENT means the Wake County Department of Environmental Services, or its successor agency.

DESIGNED DAILY DEMAND means the minimum daily volume of water to be pumped from a well at the designed and approved pumping rate.

DIRECTOR means the Environmental Services Department Director or his delegate.

HEALTH DIRECTOR means the Human Services Director and / or his/her designee.

HUMAN SERVICES AND ENVIRONMENTAL SERVICES BOARD means the Wake County Human Services and Environmental Services Board or successor entity.

LARGE CAPACITY WELL means a well or multiple, interconnected wells that have a known demand or a design demand of ten thousand gallons per day or greater for one day or more per year.

MODIFIED means increasing well depth or circumference of the well, or any other structural or mechanical modification implemented to increase the well yield or increase pumping rates beyond the designed rate permitted by NCDENR at the time of issuing the original well permit.

NCDENR means the North Carolina Department of Environment and Natural Resources

OWNER OR AGENT means the Permittee, Owner, Owner's Agent or Operator of a well.

PRIVATE WELL means any well and well water supply furnishing potable water to a residence or business that is not a semi-public or public water system

PUBLIC WELL means a well or wells and water system as defined in 15A NCAC 18C.0102 (Rules Governing Public Water Supplies)

SEMI-PUBLIC WELL means a well and water supply that serves water for the purpose of human consumption to three to fourteen (3-14) service connections or less than 25 year-round residents and that does not meet the definitions for a public water system, or a private well water supply.

WELL INTERFERENCE means the lowering of the water level in one well due to the pumping of another well, such that the ability of the affected well to provide an assured supply of water for drinking or waste removal is compromised.

ZONE OF INFLUENCE MONITORING PROGRAM means a groundwater monitoring program, approved by the Department, and submitted and conducted by the Owner or Agent of a Large Capacity Well to confirm or refute the presence of well interference between a Large Capacity Well and private or semi-public well.

SECTION III: APPLICABILITY

The requirements of this ordinance shall be acted upon, administered, and enforced by the Department upon receiving information and data that suggests that well interference may exist between a private well, semi-public well or Large Capacity Well.

- (A) **Initial Investigations.** Upon receiving a written request from the owner of a private or semi-public well to initiate an investigation regarding degradation in the water quality or yield of a private or semi-public well, the Director shall commence an initial investigation, within thirty days, as to the potential cause of the degradation. The initial investigation shall include, but not be limited to, the following:
- a) The owner of the private or semi-public well shall be required to demonstrate that the degradation in water quality or yield of the well is not the result of pump failure, electrical failure, or other mechanical or electrical device failure.
 - b) The owner of the private or semi-public well shall be required to demonstrate that the degradation in water quality or yield is not the result of water consumption or use of water beyond what the well's original design and yield will support.
 - c) The Department staff will identify the location of other, offsite, private, irrigation and semi-public wells located up to a 2,000 linear-foot radius of the

degraded well. The Department staff will evaluate the use of water from these other wells to determine if the rate of consumption from offsite private, irrigation or semi-public wells could be the cause of the quality or yield degradation.

- d) The Department staff will identify the location of offsite, Large Capacity Wells located up to a 2,000 linear-foot radius of the degraded well.

(B) **Findings of Initial Investigations.** After the initial investigations have been completed, the Director will submit a letter to the owner of the private or semi-public well(s) that requested the initial investigation, and the letter will summarize the findings of the investigation:

- a) If it is determined that well interference has not occurred, as defined in these regulations, the Director will notify the well owner in writing of this finding and that no additional investigations will be conducted unless additional information is provided by the well owner.
- b) If it is not possible to determine the cause of well degradation for water quality or yield, the Director will notify the well owner in writing that there is insufficient information and data to confirm well interference and no additional investigations will be conducted unless additional information is provided by the well owner.
- c) If a well contractor or well pump installer reports that the cause of the well degradation for water quality or yield is the result of electrical or mechanical malfunction, or construction of the well, then the Director will confirm with the well owner in writing that the degradation resulted from mechanical or electrical malfunction or well construction.
- d) If it is determined that the cause of the well degradation for water quality or yield is the result of existing water consumption patterns by the well owner, then the Director will notify the well owner in writing that the degradation resulted from onsite water consumption patterns.
- e) If it is suspected that the cause of the well degradation for water quality or yield is the result of existing water consumption patterns from offsite private, irrigation, semi-public or large capacity wells, then the Department will notify the well owner in writing of the intent to initiate a well interference investigation of the suspect offsite private, irrigation, semi-public or large capacity wells. The investigation will radiate outward from the degraded well as needed, and may include all suspect wells, up to a 2000' radius of the

degraded well. The owner of a suspected interfering well will fully cooperate in accordance with the requirements of this ordinance.

- (C) **Director Decisions.** The determination as to sufficiency of available information and data to warrant additional investigations of well interference shall be made at the sole discretion of the Director. If the Director determines that there is insufficient information and data to warrant investigation of well interference the owner of the private or semi-public well may appeal that decision to the Human and Environmental Services Board through the appeal process established in “Wake County Human Services Department of Environmental Services Rules of Appeal”.
- (D) **Well Interference Investigations.** Based on information and data provided to the Director from the initial investigations, the Director may authorize the conduct of a Well Interference investigation for wells located up to a 2,000 linear-foot radius of the degraded well.
- a) The objective of the Well Interference investigation will be to determine well interference between the investigated well and the degraded well.
 - b) The Well Interference investigation shall be conducted in accordance with the requirements of this ordinance.
 - c) The investigation, by the Department, of possible well interference shall include, but not be limited to, the following for Large Capacity Wells: review of records of well construction, well pumpage and water levels, field inspection, field testing (Zone of Influence Monitoring), and data collection requirements.

SECTION IV REGISTRATION REQUIREMENTS

Owners of Large-Capacity wells constructed or modified after the effective date of this ordinance shall register the Large Capacity well with the Department. The Owner, Agent or Operator of the Large Capacity well will be required to submit, within thirty days of completion of construction or modification of the well, the following data:

- A. Owners name and address
- B. Site map showing well location and property boundaries
- C. Global Positioning Coordinates of the well
- D. Depth and diameter of well and the casing material type and casing depth

- E. Depth of water surface (static level) elevation at time of completion
- F. Information regarding other well systems or water networks to which the well is interconnected
- G. A copy of the NCDENR GW – 1 record
- H. Depth to productive fracture zones
- I. Horsepower rating of pump
- J. Permitted pumping rate
- K. For newly constructed wells, depth of water surface elevation below top of well casing measured at the conclusion of the twenty-four hour pump test.
- L. A description of the equipment and methodology to be used to collect report and store average daily pumping record data and pump run time data, which can be requested for inspection by the County at any time. The owner or operator of the well must retain at least three years of data.
- M. Elevation of top of well casing in reference to mean sea level.

SECTION V: NOTIFICATION REQUIREMENTS

Upon determining that there is sufficient information and data to warrant an investigation of well interference, the Director shall notify the owner or agent of record for a well that information has been presented to the Department to warrant an investigation.

The notification shall be submitted to the owner or agent of record of the well thirty-days in advance initiating the investigation. The notice shall provide a summary of the information and data presented to the Director prompting the Department to act upon, administer, and enforce the requirements of this ordinance.

SECTION VI: INVESTIGATION REQUIREMENTS

When the Director determines that there is sufficient information and data to warrant an investigation of well interference, and proper notification has been provided to the owner or agent of record of a well, then requirements of this section of the ordinance shall be administered. These requirements shall apply to all Large Capacity Wells and private and semi-public wells.

- (A) **Data Collection.** Within fifteen working days of receiving Notification, the Owner, Agent, or Operator of a well subject to investigation will be required to submit to the Department the following information:
 - a) Owner’s name (facility name) and the well’s location;

- b) Owner's address (facility address)
 - c) Site map showing well location and property boundaries
 - d) Description of well type and activity requiring permit
 - e) Depth and diameter of well and the casing material type and depth
 - i) Depth of water surface elevation at time of original well construction
 - ii) Depth to productive fracture zones
 - iii) Current depth of water surface elevation
 - f) Number of permitted connections and the permitted designed daily demand as established by NCDENR in NCAC Title 15A Subchapter 18C, Sections .0402 and .0409
 - g) Name and location of other wells or water networks to which the well is interconnected.
 - h) Summary of subsurface conditions and depth of water bearing zones
 - i) Average daily pumping records for the 90-day period preceding the date when the notification letter was submitted to the owner of record
 - j) Pump run time data for the 7-day period preceding the date when the notification letter was submitted to the owner of record. If available, water-level data should also be submitted.
- (B) **Zone of Influence Monitoring.** Upon reviewing the information and data provided by the Owner, Agent or Operator of a well, the Director may require the conduct of a Zone of Influence Monitoring Program (Program). The Program shall be conducted in accordance with this section of the ordinance.
- a) The Program shall be planned and designed by a North Carolina licensed Professional Geologist or Professional Engineer prior to being submitted to the Department for review and comment. The proposed program shall be submitted to the Department for review within thirty working days from the date notification is issued by the Director.
 - b) If the proposed Program requires access to third-party private or semi-public wells, then Department staff will:
 - i) Solicit completed Access Agreements Forms from the third-party well owners so that required data for the Program can be collected.

- ii) Assist the geologist or engineer in installing data collection devices in third party wells for which access agreements have been obtained.
 - c) The Department staff will review the proposed Program to assess the effectiveness of the proposed Program to confirm or refute the presence of well interference between the suspected interfering well and the degraded well.
 - d) Upon completing the review of the proposed Program, the Department will provide written comments to the Owner or Agent of the suspected interfering well for incorporation into the final Program. Once the Department's comments have been incorporated in the proposed Plan, the Owner or Agent of the suspected interfering well will submit the final Program to the Department.
 - e) The Owner or Agent must commence the Program within fifteen days of receipt of the review comments from the Department.
- (C) **Program Reporting and Review.** The results of the Program shall be submitted to the Department for review within thirty days of commencement of the zone of influence monitoring portion of the Program. The Department will review the information and data generated for the Program to determine if the suspected interfering well is the source of well interference for the degraded well. The Department will make a determination within thirty days of receipt of the Program results.

If it is determined that no well interference exists between the suspected interfering well and the degraded well, then the investigation will be concluded and no further action will be required of the Owner, Operator, or Agent of the suspected interfering well, and the Well Owner, Operator, or Agent will be notified of this determination in writing. The Director will submit the findings of the Program in writing to the owner of the private or semi-public well that requested the investigation, and the letter will indicate that no well interference exists and no additional investigations will be conducted unless additional information is provided by the owner of the private or semi-public well that would warrant further consideration.

- (D) **Director's Final Decision and Right of Appeal.** The determination as to sufficiency of the information and data to confirm the presence of well interference shall be made at the sole discretion of the Director based on the information and data collected during the Program. The Owner or Agent of a well may appeal the Director's final decision to the Human and Environmental

Services Board through the appeals process established in “Wake County Human Services Department of Environmental Services Rules of Appeal”.

SECTION VII: MITIGATION REQUIREMENTS

- (A) If it is determined that well interference exists between the suspected interfering well and the degraded well, then the Owner, Operator or Agent of the well causing the interference will be required to implement mitigation measures to address the impacts observed and recorded during the Program, and during the Department investigation for the degraded well.
- (B) **Mitigation.** Mitigation measures may include, but are not limited to, the following options:
 - a) Reduce the pumping rate of the interfering well such that interference is no longer recorded in the degraded wells. The reduced pumping rate shall not be lower than the designed rate approved by NCDENR for the Large Capacity Well, where applicable. The reduced pumping rate will be established as the maximum allowable, daily demand pumping rate at which the Large Capacity Well may be operated;
 - b) Provide a supplemental or alternative source of potable water to the owners of the private or semi-public water supply wells that were determined as being degraded. The quantity and quality of the supplemental or alternative water supply shall be equal to or greater than the original water supply yield and quality available from the degraded water supply well.
- (C) Other mitigation measures, that the Owner or Agent of the interfering well and the owners of degraded wells, mutually agree are sufficiently compensatory for the interference imposed on the degraded water supply well.
- (D) If, as a result of investigations conducted pursuant this ordinance, it is determined that a suspected interfering well is the source of well interference for a private or semi-public water supply well, and the Owner, Agent or Operator chooses to mitigate by reducing the rate of pumping for the interfering well, then the Department shall require proof of agreement between the Owner, Agent or Operator of the interfering well and the Owner, Agent or Operator of the degraded well.

- (E) The agreement shall specify the new maximum daily pumping rate for the interfering well.
- (F) Monthly monitoring reports shall be submitted to the Department for the interfering well, and the reports shall include
 - a) Average daily pumping totals
 - b) Daily static and pumping groundwater surface elevations
 - c) Average daily pump run time data

SECTION VIII: ENFORCEMENT AND PENALTIES

If any person violates any part of these regulations or willfully fails to perform any acts required by these regulations, he shall be guilty of a misdemeanor and shall be subject to sanctions as provided in N.C.G.S. 130A-25; additionally, he may have any permit or registration issued pursuant to these rules suspended or revoked. Such enforcement procedures shall be in addition to and not to the exclusion of any other civil or criminal enforcement mechanisms available under law.

SECTION IX: INJUNCTIONS

If any person violates any of these regulations, the Director may institute an action in the Superior Court of Wake County for injunctive relief as provided in N.C.G.S. 130A-18.

SECTION X: APPEALS PROCEDURE

Appeals concerning the interpretation and enforcement of these rules shall be conducted in accordance with the Wake County Environmental Services Rules of Appeal (<http://www.wakegov.com/NR/rdonlyres/60978F95-F817-4854-8EDA-F5CD09284203/0/AppealsProcedure.doc>) and in compliance with N.C.G.S. 130A-24.

SECTION XI: SEVERABILITY

If any provision or clause of these regulations or the application thereof shall be declared invalid by a court of competent jurisdiction, such declaration shall not invalidate any other provision, clause, or application of these regulations.

SECTION XII: REQUIRED ORDINANCE REVIEW

Five (5) years from the effective date of this ordinance the Department, in consideration of data collected, shall review the provisions of this ordinance.

SECTION XIII: EFFECTIVE DATE

These rules and regulations adopted by the Wake County Human Services and Environmental Services Board on this the 27th day of August 2009 and shall be in full force and effect from and after October 1, 2009

SIGNED: _____
Chairperson, Wake County Human Services and Environmental Services Board

SIGNED _____
Director, Wake County Department of Human Services

SIGNED _____
Director, Wake County Department of Environmental Services

SIGNED _____
Clerk, Wake County Human Services and Environmental Services Board

Approved as to form: _____

Scott W. Warren, County Attorney