

Chapter 6: Environmental Health

Rockingham County's Environmental Health Division is responsible for more than thirty separate functions which are mandated by state or local laws, ordinances, rules and regulations. The main goal of the environmental health program is the prevention of communicable and environmentally-related diseases within our community. It is the Department's belief that all citizens have a right to a safe food supply and water supply, pure air and a clean environment.

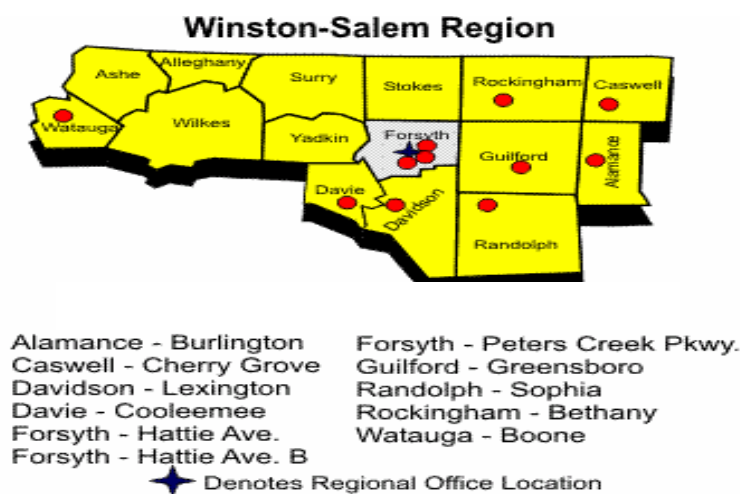
Air Quality

Clean air is essential to public health, the environment and the economy in Rockingham County. We need clean air so people can breathe without triggering asthma and other health problems. We need clean air to preserve our forests, streams, and lakes for recreation and wildlife. We also need clean air to sustain tourism, agriculture and the economic health for our residents.

The U.S. Environmental Protection Agency (EPA) reports that there are 188 hazardous or toxic air pollutants. These pollutants cause serious health concerns and affect the environment. The Clean Air Act of 1970 defined six criteria with concentration limits to protect public health. Monitoring sites report data for six criteria of air pollutants: carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, particulate matter and lead (EPA, 2008^a).

Rockingham County is part of the Triad Region which includes nine other counties and has eight monitoring sites. Bethany is Rockingham County's monitoring site. Each monitoring site records eight hours of ozone quality from April 1 through October 31. According to Forsyth County Environmental Affairs, the Triad Region has been affected by increased ozone (O₃) levels which are evident in Figure 11. Ozone levels typically rise throughout the country during the summer months due to more sunlight, stagnant air masses and warmer temperatures. Rockingham County residents are affected by the increased levels of ozone.

Figure 11.



State and Local Data

- In 2007, Rockingham County had one (8-hour) ozone exceedance day on August 24.
- During the same year, there were 94 reported 8-hour exceedances over a period of 27 days and 3 reported 1-hour exceedances over a period of 2 days throughout North Carolina.
- Rockingham County was given a C grade in ozone quality from the American Lung Association in 2007.

In North Carolina, up to 70 percent of air pollution in cities is caused by cars and trucks. Ozone pollution also comes from “off road” engines such as lawnmowers, construction equipment and from power plants. When pollutants heat up in sunlight, ozone levels can increase to the point where they become unhealthy (NC-DENR, 2003).

Every day, the average adult breathes more than 3,000 gallons of air. Children breathe even more air per pound of body weight, therefore making children more susceptible. People who exercise and people with asthma are especially sensitive to the harmful effects of pollution. Ozone pollution can irritate respiratory systems, impair breathing, aggravate asthma, and damage the lining of lungs. On bad air days, vulnerable populations should take it easy outside, especially in the afternoon, in order to reduce the affects of air pollution (NC-DENR, 2003).

During 2005-2007, Rockingham County listed 214 days on the Triad Air Quality Index. The color codes of the Index show the quality of the air as good (green), moderate (yellow), unhealthy for sensitive groups (orange), or unhealthy (red). Of the 214 days in 2007, Rockingham County (Bethany site) had 161 good days (green), 51 moderate days (yellow) and one day that was unhealthy for sensitive groups (orange) (NC-DENR, 2007^b).

Table 17 indicates an increased amount of air pollution from 2005 to 2007 in both Rockingham County (Bethany site) and the Triad Region.

Table 17.

2007 Ozone Monitoring Statistics Table

Triad Region - Number of Category Days per Monitor

Site	Red	Orange	Yellow	Green	Total
Bethany	0	1	51	161	213
Cherry Gove	0	1	55	158	214
Cooleemee	0	4	65	145	214
Hattie Ave.	0	2	58	154	214
Mendenhall	0	4	59	148	211
Clemmons	0	1	45	166	212
Shiloh Church	0	0	36	177	213
Union Cross	0	2	63	149	214
Total (Highest Monitor/Day)	0	8	80	126	214
Total (Monitor Days)	0	15	432	1258	

2006 Ozone Monitoring Statistics Table

Triad Region - Number of Category Days per Monitor

Site	Red	Orange	Yellow	Green	Total
Bethany	0	1	31	182	214
Cherry Gove	0	0	33	179	212
Cooleemee	0	1	43	170	214
Hattie Ave.	0	2	30	182	214
Mendenhall	0	2	41	139	182
Clemmons	0	1	24	189	214
Shiloh Cross	0	0	4	210	214
Union Cross	0	3	36	179	214
Total (Highest Monitor/Day)	0	6	57	151	214
Total (Monitor Days)	0	10	245	1423	

2005 Ozone Monitoring Statistics Table

Triad Region - Number of Category Days per Monitor

Site	Red	Orange	Yellow	Green	Total
Bethany	0	0	31	183	214
Cherry Gove	0	0	27	187	214
Cooleemee	0	3	44	167	214
Hattie Ave.	0	0	26	187	213
McLeansville	0	1	22	78	101
Mendenhall	0	3	36	161	200
Clemmons	0	0	20	132	152
Shiloh Cross	0	0	22	191	213
Union Cross	0	0	41	172	213
Total (Highest Monitor/Day)	0	4	56	154	214
Total (Monitor Days)	0	7	269	1458	

- In 2004, there was only one (orange) day that was unhealthy for sensitive groups in the Triad Region.
- That number has steadily increased in the Triad Region from 7 days in 2005 to 15 days in 2007.

In July 2004, Rockingham County implemented the state's auto emissions systems testing program which is designed to improve air quality. In 2006, North Carolina completed a four-year expansion program for cars and light-duty trucks. The state also added five more counties to the program, bringing the total to 48 counties statewide. The Division of Air Quality worked with the North Carolina Environmental Management Commission to develop new rules for controlling mercury emissions from coal-fired power plants in 2006 (NC-DENR, 2006 & NC-DENR, 2004).

Water Quality

According to the Federal Clean Water Act of 1972, one way to measure Rockingham County's environmental health is to evaluate the water. This Act established the basic structure for regulating discharges of pollutants into the waters of the United States. This gave EPA the authority to implement pollution control programs and set water quality standards for all contaminants in surface waters.



Water is a renewable resource, but clean water is limited; as the population grows, so will the demand for clean water. Therefore, water quality is extremely important. Drinking water in Rockingham County is acquired from municipal water supplies in the towns and cities. Municipal water is supplied by the Dan River, Lake Reidsville, Mayo River, and a private company Dan River Water, Inc.. Rural residents obtain water from private wells, Dan River Water, Inc., or water lines from Rockingham County.

Drinking water quality varies from place to place, depending on the condition of the source of water from which it is drawn and the treatment it receives. Water may be contaminated by various sources, which may threaten the health of residents, animals, and the environment. Human and animal waste, chemicals and cleaners poured down household sinks, leaking underground storage tanks, chemical spills and improper use of fertilizers and pesticides are all examples of contamination sources. Both ground and surface water must be protected from pollutants for the safety of Rockingham County residents.

The Environmental Health Division of the Rockingham County Department of Public Health collects water samples from residents who request tests to be sure they have safe water or when families are buying new homes (RCDPH, 2008^b). The Rockingham County Environmental Health Division submits water samples for coliform bacteria for both public and private well water systems to the North Carolina State Laboratory of Public Health in Raleigh. Water is also sampled after each new well is drilled with samples for coliform bacteria, inorganic chemicals and nitrates-nitrites

- From January 1 - August 11, 2008, 252 wells were tested for coliform bacteria. Of the 252 wells, 14 percent were found to be positive for coliform and 2 percent were found to be positive for both coliform and Fecal/E. Coli.
- In 2007, 234 wells were tested for coliform bacteria. Of the 234 wells, 25 percent were found to be positive for coliform and 2 percent were found to be positive for both coliform and Fecal/E. Coli.
- In 2006, 293 wells were tested for coliform bacteria. Of the 293 wells, 30 percent were found to be positive for coliform and 1 percent was found to be positive for both coliform and Fecal/E. Coli.
- In 2005, 451 wells were tested for coliform bacteria. Of the 451 wells, 26 percent were found to be positive for coliform and 1 percent was found to be positive for both coliform and Fecal/E. Coli .

Table 18.
Water Sample Results by Zip Code, 2005-2008

Zip Code	2005		2006		2007		- August 2008	
	Positive for Coliform	Positive for Fecal/ E. coli	Positive for Coliform	Positive for Fecal/ E. coli	Positive for Coliform	Positive for Fecal/ E. coli	Positive for Coliform	Positive for Fecal/ E. coli
27048	21		13		7	2	3	1
27025	26	2	15		11	1	4	
27027	2		3		3		5	
27288	3		1		4		0	
27326	7		3		9		5	
27320	42	2	44	2	20	1	15	3
27357	14		5		2		3	
27358	2		1		0		0	
27214	0		2		2		1	
27311	0		1		0		0	
27375	0		0		1		0	
Total	117	4	88	2	59	4	36	4

Source: North Carolina State Laboratory, 2008

Rockingham County has begun using Global Positioning System (GPS) equipment and software, making well location surveys easier and more accurate. Using the GPS receiver, employees can locate wells within 2 to 5 meters of their actual positions. The latitude and longitude collected by the GPS receiver is corrected to a high accuracy level using data from one of the three North Carolina Geodetic Survey GPS base stations.

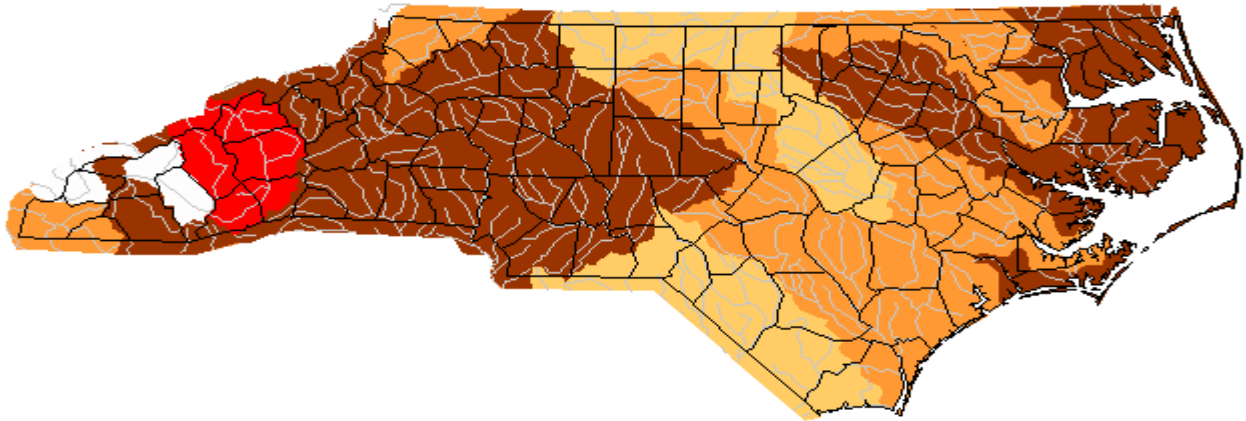
Drought

According to the National Weather Service, a drought is defined as a period of abnormally dry weather sufficiently prolonged for the lack of water to cause serious hydrologic imbalance in the affected area.

Throughout 2007, North Carolina experienced rainfall deficits, with most counties only receiving 50-75 percent of the normal rainfall. These deficits ranged from 8 to 12 inches in the Piedmont to 20 to 24 inches in the mountains. Since January 1, 2008, this deficit continued to increase, with rainfall only ranging from one to three inches through February 12. This is only 30 to 60 percent of normal rainfall amounts. As a result of this ongoing shortage of rainfall, the area continues to experience moderate to extreme drought (NWS, 2008).

Figure 12.

Sunday, August 10, 2008

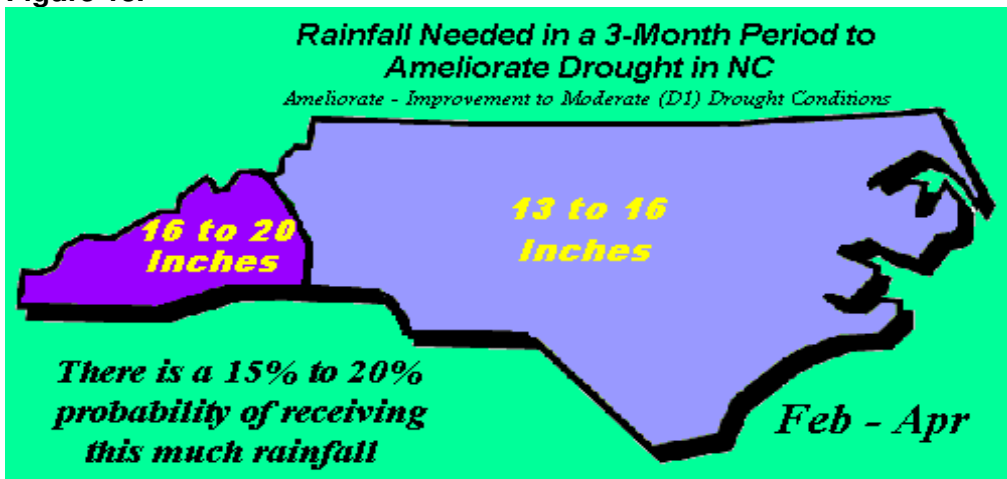


Explanation - Percentile classes				
Low	≤5	6-9	10-24	Insufficient data for a hydrologic region
Extreme hydrologic drought	Severe hydrologic drought	Moderate hydrologic drought	Below normal	

Source: USGS, 2008

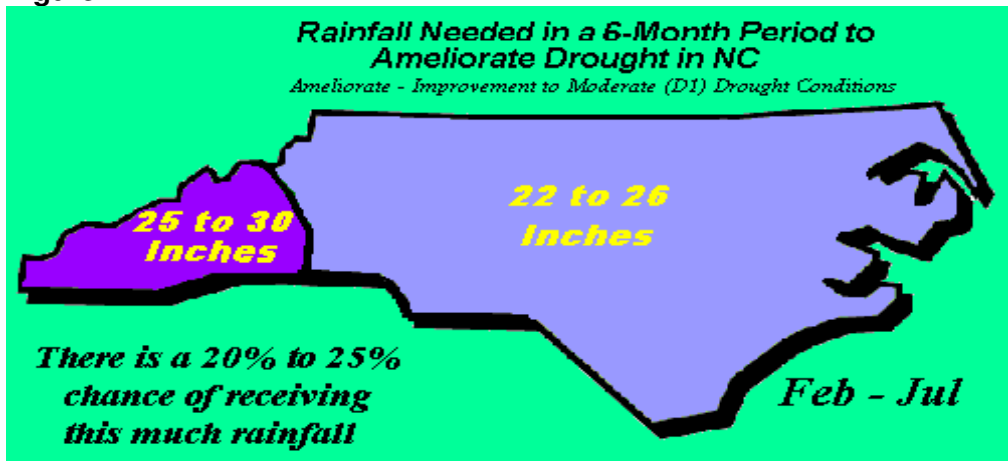
According to the National Weather Service and North Carolina State Climate Office (2008), most of the state needs at least 13 to 16 inches of rain through April (Figure 13) and 22 to 26 inches of rain through July (Figure 14) to at least lessen the impact of drought on the state. These rainfall amounts would allow for stream flow and water supply improvements. If the state doesn't receive these amounts, drought conditions will have serious consequences during the summer, especially in the hotter months.

Figure 13.



Source: NWS, 2008

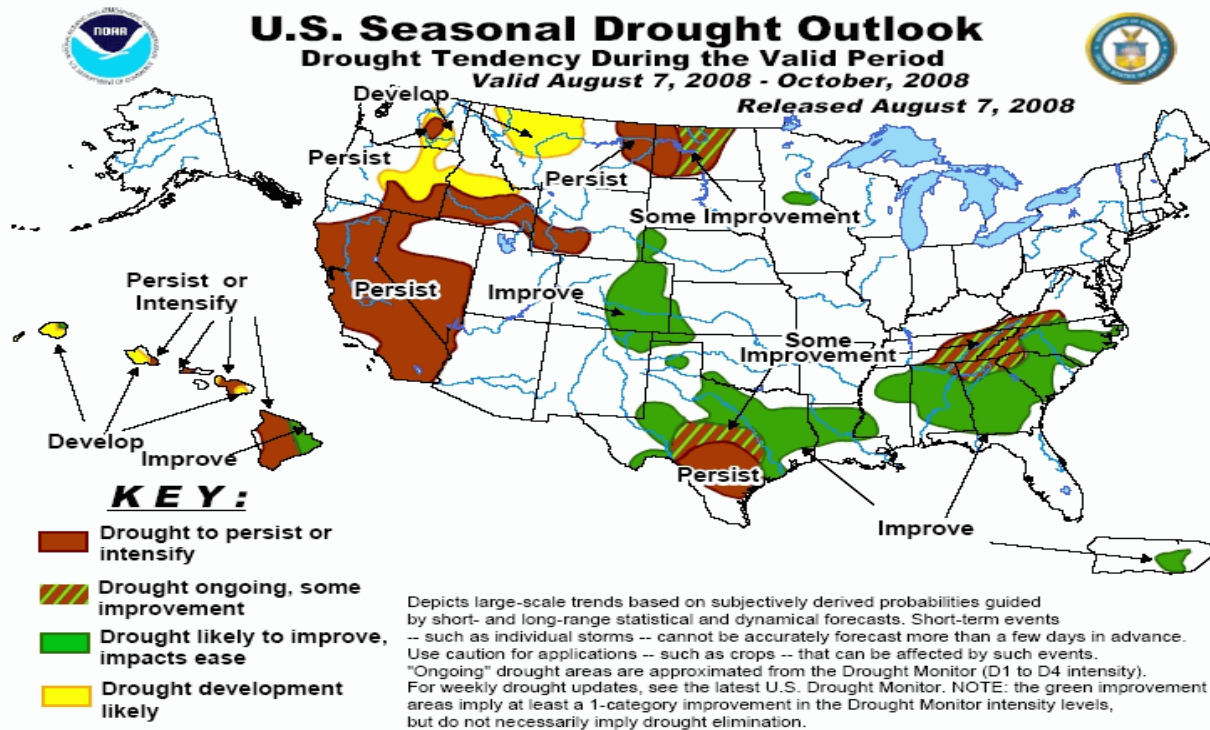
Figure 14.



Source: NWS, 2008

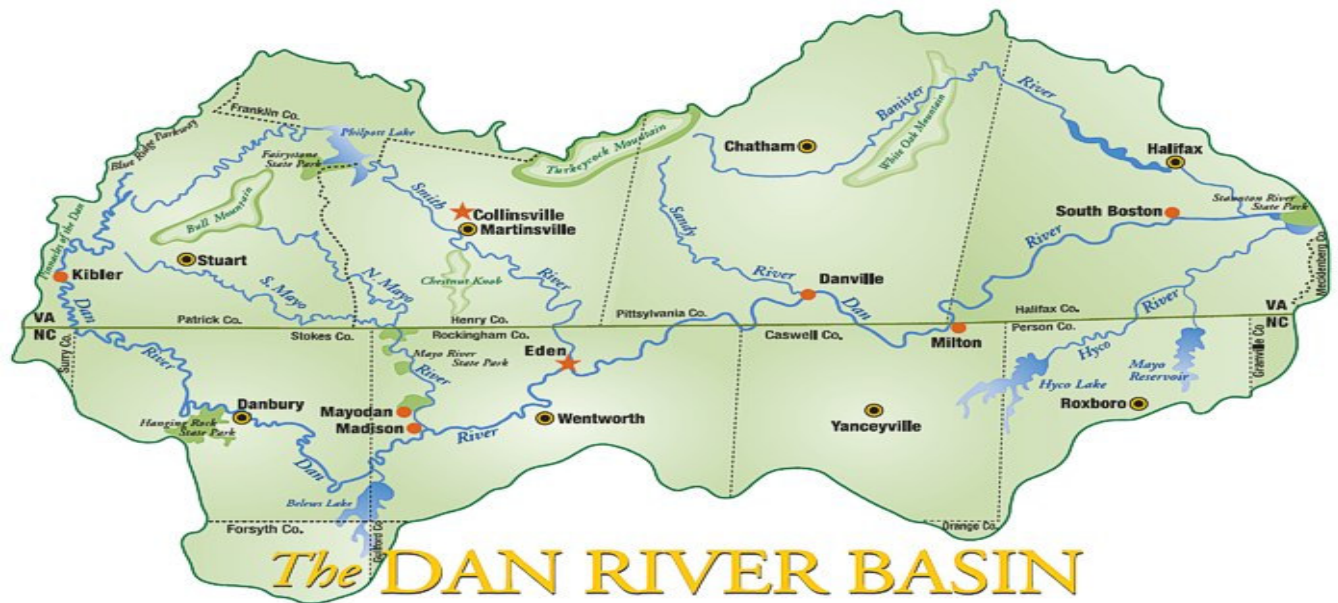
Drought conditions in the southeast are expected to continue due to La Nina. La Nina is a weakened southern stream of the jet stream which typically brings moisture and enhanced storm systems into the mid Atlantic. This can result in fewer storms and less moisture in the Carolinas. La Nina's influence on rainfall weakens considerably as temperatures warm heading into late spring. According to National Oceanic and Atmospheric Administration Climate Prediction Center, North Carolina will continue with rainfall shortages until June and summer rainfall is highly dependent upon thunderstorms and the occasional tropical system (NWS, 2008).

Figure 15.



Source: NWS, 2008

Figure 16.



Most of Rockingham County's water comes from the Dan River Basin. There are also five other cities using the Dan River to provide water to their residents. If the drought continues, there is concern for potential ground and surface water problems in Rockingham County and throughout the Dan River Basin (Martin, 2008). Rockingham County:

Eden

- Surface water comes from the Dan River
- The water treatment plant produces 11 million gallons of water daily

Wentworth

- Water supply comes from Dan River or private wells
- Plans for the future include a water storage tank to increase supply

Reidsville

- Surface water comes from Troublesome Creek and flows into Lake Reidsville's 720-acre reservoir
- 17 Million gallons of water flows into the lake daily and the water treatment plant removes 9 million gallons daily
- Reidsville currently sells water to Greensboro, but will stop when the lake is down 5 feet

Mayodan

- Surface water comes from the Mayo River
- The water treatment plant treats 800,000 gallons a day including water pumped to Stoneville
- Has the capability to treat 3 million gallons a day

Stoneville

- Purchases treated water from Mayodan
- Mayodan supplies 300,000 gallons of water per day

Madison

- Surface water comes from the Dan River
- The treatment plant treats 550,000 gallons a day including water sold to the County
- Can treat 1.5 million gallons daily with capacity to store 1 million gallons
- Can purchase water from Mayodan

There are several public health concerns in Rockingham County as a result of the drought and the lack of rainfall. As the water levels drop, stagnant or dirty water will increase due to lack of dilution. As a result, there will be elevated microbe, chemical or algal toxin levels in water supplies. People (especially the elderly and young) may not have enough water to maintain health. There may be hygiene-related health issues. As water treatment plants increase chemicals to treat water supplies, people on dialysis may be at risk from chemical changes, especially increased nitrates (Martin, 2008).

Wastewater Treatment

Wastewater is used water. It contains food scraps, oils, soaps, chemicals, and human waste. In homes, this includes water from sinks, bathtubs, toilets, washing machines and dishwashers. Businesses and industries also contribute their share of used water that must be cleaned. Water is naturally cleaned through nature in small amounts although nature can not sustain the increased usage. Therefore, wastewater treatment plants are vital for the environment as well as our health. Wastewater treatment plants treat sewage produced everyday before releasing it back into the environment (USGS, 2007).



Treating wastewater is done to care for the environment and for health reasons. People live, work, and play close to water. In order to make water safe, harmful bacteria must be removed. If not cleaned properly, water can carry disease.

In Rockingham County, most septic-tank systems are conventional, consisting of a septic tank and drainfield. When septic systems are functioning properly, wastewater from a home flows into the septic tank from the bathroom, kitchen, and laundry area. Solids remain in the septic tank and the liquid effluent flows out of the tank to the drainfield where it is absorbed through the soil. Bacteria and viruses are removed from the effluent by filtering and soil microorganisms before the treated wastewater reaches the groundwater. Aging septic-tank systems and damaged systems can lead to sewage leaking onto the ground, into wells, and surface water (N.C. Cooperative Extension Service, 1991).

Soil, site conditions, and water usage contribute to problems and failures of septic-tank systems. It is important that septic systems are installed properly, maintaining proper setbacks from drinking-water wells, and in soils that maximize the life of each septic system. Using the North Carolina Laws and Rules for Sewage Treatment and Disposal Systems, Rockingham County Environmental Health Specialists write permits to provide the best possible conditions for installation of septic systems. New and repaired septic systems are inspected during

installation. Existing septic-tank systems also are inspected by request and as part of the inspection process for mobile home parks and migrant housing. Complaints about failing septic systems are investigated and repairs to failing systems are required.

During the 2007 calendar year, 85 repairs of failing septic-tank systems were completed out of the 625 applications for septic systems (RCDPH, 2008^b).

Solid Waste Management



Solid Waste is more commonly known as trash or garbage and it consists of everyday items such as product packaging, clothes, bottles, food scraps, newspapers, cardboard, appliances, and grass clippings. Solid waste management is important to prevent the spread of disease. Proper handling and disposal of solid waste is essential in solid waste management.

According to the North Carolina July 2005 to June 2006 Solid Waste Management Annual Report, the state per capita disposal rate is 1.36 tons per person per year, which is a 5 percent increase from the previous year. North Carolina residents disposed of 11,765,183 tons of waste in and out-of-state facilities. During the same fiscal year, Rockingham County managed 98,604 tons of solid waste and the disposal rate per capita was 1.07 tons (NC-DENR, 2007^a).

According to Rockingham County Health Education Division (RCDPH, 2008^d), there are 8,411 households or 20,691 persons not served by any solid waste collection services, see Table 19. This number has increased more than 26 percent from 2004, when only 6,652 households or 16,380 persons were without solid waste collection in Rockingham County. While some residents take solid waste to the county's landfill on Shuff Road, others dump (garbage, old furniture, and appliances) solid waste illegally along roadsides, rivers, and streams, use burn barrels or bury garbage. Litter hurts the economy, especially tourism and new business recruitment.

Table 19.

Calculations of the Number of Households and Residents without Solid Waste Collection in Rockingham County, North Carolina in 2008

Households Served by Municipal or Municipally Contracted Collection	13,958
	+
Households Served by Private Collectors	<u>14,720</u>
	=
Total Number of Households in Rockingham County WITH Municipal or Private Collection Service	28,678
<hr/>	
Total Number of Households in Rockingham County	37,089
	-
Total Number of Households with Municipal or Private Collectors	<u>28,678</u>
	=
Total Number of Households in Rockingham County WITHOUT Municipal or Private Collection Service	8,411
<hr/>	
8,411 (Number of Households without Collection)	
X	
2.46 (the Average Persons per Household)	
=	
20,691 persons without collection in Rockingham County	

*The number of households is the actual number (as of March 19, 2008) of households served by solid waste collection per municipality and private collectors. The 2004 CHA used U.S. Census Data which would explain for some differences.

Source: RCDPH, 2008^d

Enforcement

The Rockingham County Code Enforcement Division and Rockingham County Environmental Health Division protect the environmental integrity of the county by investigating complaints, ticketing or issuing notices to solid waste violators, and educating elementary students on environmental stewardship. Rockingham County also has 16 Keep NC Clean and Green signs posted throughout the county.

The number of cases and citations for solid waste violations has increased significantly from 2003 (Rockingham County Code Enforcement Division, 2008).

- In 2003, there were 249 cases with 7 citations
- In 2004, there were 263 cases with 13 citations
- In 2005, there were 264 cases with 6 citations
- In 2006, there were 445 cases with 30 citations
- In 2007, there were 595 cases with 62 citations

Big Sweep

In an effort to clean up some of the illegal dumping of solid waste, North Carolina organized an event called Big Sweep in 1986. Originally this event was part of a one-day Coastal Cleanup although it has expanded over the years. In 2001, Rockingham County extended Big Sweep into a week-long fall clean-up project. In previous years, the Rockingham County Beautification Council participated in a Spring Clean Up. Currently the Rockingham County Beautification Council is promoting recycling in the county (Butler, 2008).

Table 20.
Big Sweep Totals in Rockingham County for Years 1991-2007

Year	Workers	Miles	Bags	Tires	Tons	Pounds
1991	60	40		29	1.75	3,500
1992	182	64		211	4.7	9,400
1993	242	65		73	10	20,000
1994	191	65		146	8	16,000
1995	44	5			0.26	520
1996	186	47			3.6	7,200
1997	267	71	406	123	6.5	13,000
1998	336	74	564	217	10.4	20,800
1999	350	80	567	169	10	20,000
2000	468	92	867	312	24.2	48,400
2001	980	180	967	437	28	56,000
2002	981	189	1636	229	23	46,000
2003	1016	213	1299	158	18.75	37,500
2004	1018	161	1319	317	23.12	46,240
2005	1179	300	1924	210	26	52,000
2006	1190	191	1806	410	26.35	52,690
2007	1138	202	1878	201	28	56,000
Totals	9,828	2,039	13,233	3,242	252.63	505,260

Source: Butler, 2008

Recycling

Two of the largest municipalities in Rockingham County also participate in recycling solid waste. Materials like glass, plastic, newspapers, steel cans, and mixed paper are collected, separated and sent to facilities that can process them into new materials or products. Recycling kept 82 million tons (32 percent) of garbage out of landfills in 2006 (EPA, 2008^b). According to the City of Reidsville, the city recycled 483,371 pounds of solid waste in 2007 (personal communication, March 2008).

- Glass = 50,339 pounds
- Plastic (#1 and #2) = 27,340 pounds
- Metal Cans (Steel and Tin) = 14,800 pounds



- Newspaper = 240,040 pounds
- Mixed Paper = 134,220 pounds
- Used Motor Oil = 16,632 pounds

During fiscal year of July 2006-June 2007, the City of Eden collected and recycled 2,832,620 pounds of solid waste, which is an 8.26 percent increase over the previous year (City of Eden, personal communication, March 2008).

- Glass (Clear/Brown/Green) = 57,500 pounds
- Plastic (#1 and #2) = 54,400 pounds
- Metal Cans (Steel and Tin) = 719,320 pounds
- Newspaper = 712,500 pounds
- Mixed Paper/Cardboard = 1,288,900 pounds

Food Protection

On August 1, 2007, new rules went into effect for Food Service Establishments that place more emphasis on higher-risk establishments and those violations that directly contribute to foodborne illnesses. These rule changes characterize restaurants on certain risk factors such as what kinds of Potentially Hazardous Foods are prepared, if the establishment uses any specialized processes (ex: curing, smoking, acidification, sprouting beans, reduced oxygen packaging), how many Potentially Hazardous Foods are cooked and cooled and if the establishment serves or caters to a Highly Susceptible Population. The Environmental Health Specialists use a checklist of questions to determine the Risk Category for each Food Service Establishment. The frequency of inspections for each establishment will not exceed four inspections a year (RCDPH, 2008^o).

The new improvement also focuses more on “Critical Violations” during inspections which are those violations that directly relate to any one of the five risk factors that contribute to foodborne illness outbreaks. The five risk factors are: (1) improper hot and cold holding, cooling or reheating of potentially hazardous foods, (2) inadequate cooking of food, (3) poor personal hygiene of food handlers, (4) cross-contamination and contamination of food-contact surfaces and (5) food from unapproved sources.

When a Critical Violation is observed during an inspection and not corrected, points will be taken depending on the severity and recurring nature of the violation. The establishment has 10 calendar days to correct the Critical Violation. If the Critical Violation is corrected during the inspection, point value may not be deducted if it has not been documented previously. If the Critical Violation is not corrected within the time frame specified, permit, legal or other enforcement actions will be taken (RCDPH, 2008^o).

These new inspections also involve more communication with the owner, manager, and employee than in previous years. Inspectors are required to ask specific questions about food handling, food preparation, cooling, and thawing, cooking, etc. in order to assess the risk of food-borne illness.

Under the new inspection protocol, each food service establishment is evaluated and assigned a risk category, developed by the Division of Environmental Health’s Food Protection Branch.

The risk categories are based on the type of food and amount of food preparation conducted in the facility. Risk categories are as follows:

- Risk Category 1 – These facilities will be inspected a minimum of once a year and include food service establishments that prepare only non-potentially hazardous foods. An example of a Category 1 facility includes some drink stands.
- Risk Category 2 – These facilities will be inspected a minimum of two times a year and include food service establishments that cook and cool no more than two potentially hazardous foods (those foods that pose a greater risk to public health) received in a ready-to-cook form. Examples of Category 2 facilities include pushcarts, some grocery delis and pizza establishments.
- Risk Category 3 – These facilities will be inspected a minimum of three times a year and this applies to food service establishments that cook and cool no more than three potentially hazardous foods. Examples of Category 3 facilities include meat markets, school cafeterias, and some sub shops.
- Risk Category 4 – These facilities will be inspected a minimum of four times a year and this applies to food service establishments that cook and cool an unlimited number of potentially hazardous foods. Examples of Category 4 facilities include full service restaurants, nursing homes, school facilities serving preschool-aged children and caterers.

As of March 13, 2008, there were 288 food service establishments in Rockingham County (RCDPH, 2008^b).

- 3 establishments in risk category 1
- 85 establishments in risk category 2
- 57 establishments in risk category 3
- 143 establishments in risk category 4



In July 2008, a new grade sheet for food service establishment inspections was implemented. The food service establishments will be graded on 48 items instead of 34. There will be 18 Critical Violations instead of 6, ranging in point value from 1 point to 4 points. Establishments can also lose up to a total of 100 points (RCDPH, 2008^c).

As much as the Rockingham County Environmental Health Division tries to protect residents from foodborne illness, there have been several outbreaks since 2005. These outbreaks include (RCDPH, 2008^a):

- March-April 2007, Salmonella enteritidis Outbreak from unknown causes affecting 7 people.
- July 2007, Salmonella enteritidis Outbreak from banana pudding with meringue affecting 30-35 people obtained from an out-of-state food source establishment.

Rabies

Rabies is an infectious viral disease that affects the nervous system of those infected. The virus is passed from the saliva of the infected animal to humans, usually through a bite or saliva contact with open skin. It almost always kills the animal or human that gets sick from it. There is no treatment option once signs of the disease are evident. There are two types of rabies:

- Vicious or aggressive - the classic rabies presentation, drooling, growling, and attacks with sudden movements or sounds.
- Dumb or Paralytic - the animal has trouble eating, drinking, and walking. Eventually the jaw and legs will be paralyzed before death.

Rabies cases were almost nonexistent in Rockingham County until July of 1996. Since then, Rockingham County has seen an escalation of this disease. Rabies impacts both wild and domestic animals with the potential of infecting citizens (RCDPH, 2008^b).

Required by North Carolina Law and the Rockingham County Animal Control Ordinance, all dogs and cats more than four months old need to be vaccinated from the rabies virus, in order to protect the residents of Rockingham County. Some citizens neglect to have their pets vaccinated by local veterinarians or during the spring rabies clinics sponsored by the Health Department, local veterinarians and animal control officers. Since 1996, Rockingham County has had 118 animals that tested positive for the rabies virus. Two of those positive cases were domestic dogs, while the remainder were wild animals, mainly raccoons and skunks (RCDPH, 2008^b). In 2006, there were 521 cases of rabies in animals in North Carolina. In that same year, there were 12 positive rabies cases in Rockingham County, 9 rabies cases involving raccoons and 3 cases involving skunks (NC-EPI, 2007^a).

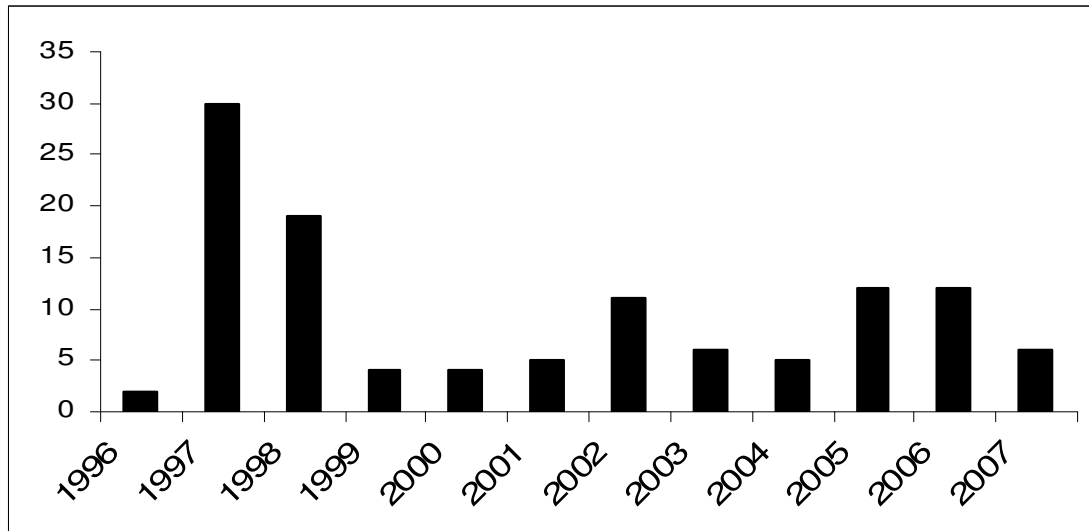
Table 21.

Type and Amount of Animals that Tested Positive for Rabies in Rockingham County, 1996- March 2008

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Bats			2					1	1	1			
Cats													
Dogs		2											
Raccoon	2	22	12	1	3	5	11	3	2	6	9	3	1
Fox			2		1				1	3			
Skunk		5	3	3				2	1	2	3	3	1
Groundhog		1											
Totals	2	30	19	4	4	5	11	6	5	12	12	6	2

Source: RCDPH, 2008^b

Figure 17.
Confirmed Rabid Animal, by Year, in Rockingham County



Source: RCDPH, 2008^b.

The rabies program includes control and education. State law requires vaccination of animals against the rabies virus, and it requires rabies clinics to be held in each county. In Rockingham County, rabies clinics are held each spring, usually on the first Saturday in May. The clinic held on May 3, 2008, successfully vaccinated a total of 1,004 dogs and 182 cats. Rabies clinics and media campaigns continue to stress the problems with animal overpopulation and the need to vaccinate all domestic pets (RCDPH, 2008^b).

Lead Poisoning

Lead is a heavy metal that was previously used in the manufacturing of paint, plumbing pipes and solder, leaded gasoline, and many other products. When products containing lead deteriorate, tiny lead particles can contaminate homes and the environment. Regulations now limit the amount of lead used in paint, gasoline, and other products, but environmental lead pollution remains a health hazard.

Lead can cause health problems for people when it is swallowed or inhaled. Lead exposure is especially harmful to children under six years of age because it affects their developing brains and nervous systems. Small children are particularly susceptible because of their hand-to-mouth activity. Children living in older deteriorated housing or children who are living in poverty are also at higher risk of lead exposure.

Most poisoned children have no apparent symptoms, and consequently, many cases go undiagnosed and untreated. Blood lead levels as low as 10 micrograms per deciliter ($\mu\text{g}/\text{dL}$) are associated with harmful effects on children's learning and behavior. At higher levels (≥ 70 $\mu\text{g}/\text{dL}$), lead exposure is an acute condition and can have devastating health consequences,

including encephalopathy, seizures, coma and even death. According to the Children's Environmental Health Branch of North Carolina Department of Environment and Natural Resources, 2007 Rockingham County Childhood Blood Lead Surveillance Data includes: (NC-DENR, 2008)

- In 2007, Rockingham County had 897 children ages 1 and 2 years tested for lead poisoning.
- During 2007, 6 children tested at an elevated blood-lead level (that was determined by the lower of two consecutive blood test results of 10 µg/dL or greater within a six-month period)

Local Data

- In 2007, Rockingham County Department of Public Health Division of Environmental Health investigated 5 cases of elevated lead levels.
 - In February, a child had elevated blood-lead levels and the inside environment of a home was tested. No lead hazards were identified in the home. Outside hazards were indentified and recommendations were made.
 - In March a lead investigation was conducted at a day-care center. No lead hazards were identified.
 - In June, a child had elevated blood-lead levels. The apartment where the child lives tested positive for lead hazards. The lead hazards were identified and recommendations for remediation were made.
 - In August, a potential day-care was tested for lead. Hazards were identified and recommendations were made for remediation.
 - In November, a child had elevated blood-lead levels. Lead hazards were identified and recommendations for remediation were made.