



# LAKE WYLIE MARINE COMMISSION

*WE PROMOTE PUBLIC POLICIES AND SUPPORT REGULATIONS FOR THE  
PRESERVATION OF LAKE WYLIE AND ITS WILDLIFE AND FOR THE EDUCATION  
AND SAFETY OF THE CITIZENS WHO USE THIS BEAUTIFUL NATURAL RESOURCE.*

[LakeWylieMarineCommission.com](http://LakeWylieMarineCommission.com)

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## **Summary 2018**

**This notebook signifies and details the areas in which the Lake Wylie Marine Commission (LWMC) executes its mission. The focus of the commission is concentrated among three major categories:**

- **Safety**
- **The Environment**
- **Public Policy**

**The initiatives and programs managed by LWMC are most frequently organized through partnerships with local and state agencies as well as various stakeholders in the bi-state, three-county region of Lake Wylie.**



## Safety

### *Life Jacket Program*

**Stakeholders:**      **Lake Law Enforcement**

LWMC supplies the Lake Law Enforcement officers with an assortment of life jackets (PDFs - personal floatation devices) to give to boaters whom they stop for safety violations and who don't have the required quantities and sizes of PDFs for their passengers on board.

Stocking Lake Law Enforcement boats with life jackets at the ready allows officers to correct unsafe situations immediately and either send boaters on their way or escort them safely to shore where they can acquire the appropriate PDFs.







## Safety

### Buoy Maintenance

Since the 1990's

**Stakeholders:**            **North Carolina Wildlife Resources Commission (NCWRC)**  
                                 **York County Sheriff's Department (YCSD)**

In the North Carolina waters of Lake Wylie, the LWMC has contracted with a retired, former Mecklenburg County police officer to reposition **No-Wake buoys** that drift out of position or are lost.

For emergent dangerous situations or in cases of missing or damaged **Danger buoys**, the LWMC, with the concurrence of NCWRC, places temporary danger buoys until the NCWRC can install an official danger buoy.

In South Carolina, the LWMC refers all No-Wake and Danger buoy issues to the York County Sheriff's Department for disposition.

The LWMC Danger Buoy procedures appear on following pages.

## **DANGER BUOY PROCEDURES**

### ***Emergent Danger Condition***

1. Promulgate the information about the dangerous condition as necessary on the Lake Wylie Marine Commission (LWMC) web site and to the affected residents if feasible via local marinas, HOA newsletters, city and town notice methods, etc.
2. Determine if there is an accountable party. If so, deal with them directly and offer whatever support the LWMC can provide to correct the condition.
3. If there is no directly accountable party, contact the entities who have the most interest in resolving the issue to see what help they can provide, and then work with them to correct the condition.
4. NORTH CAROLINA - Concurrently with steps 1, 2, and 3, in the North Carolina waters of Lake Wylie place a LWMC temporary danger buoy in accordance with the North Carolina Wildlife Resources Commission (NCWRC) procedure which is:
  - a. Request of the NCWRC Engineering Services Department or Enforcement Department that a danger buoy be placed at specific location. Call 919-707-0040. Provide GPS coordinates if possible.
  - b. Cooperate and assist the NCWRC department in assessing the need for a permanent buoy at the location.
  - c. Place a temporary LWMC danger buoy after NCWRC is notified and poses no objections.
  - d. Notify NCWRC that the buoy is in service.

Note: Notify NCWRC of any temporary buoys or markers placed by accountable parties (e.g., Utilities, Inc.).
5. SOUTH CAROLINA - For dangerous conditions that arise in the South Carolina waters of Lake Wylie, concurrently carry out steps 1, 2, and 3 above and contact Sergeant Brent Mabry of the York County Sheriff's Department (YCSD) at Brent.Mabry@yorkcountygov.com. Provide a description of the hazard, and, if possible, give GPS coordinates and/or the nearest street address. The YCSD will place buoys as needed.

## **DANGER BUOY PROCEDURES**

### ***Emergent Danger Condition - continued***

6. When the dangerous condition has been corrected:
  - a. In North Carolina, remove the buoy and advise NCWRC.
  - b. In South Carolina, advise Sergeant Mabry. YCSD will remove danger buoys they place.

### ***Missing Danger Buoys – North Carolina***

1. Report the missing danger buoy to NCWRC at 919-707-0040.
2. Replace the buoy temporarily if NCWRC cannot do so in a timely manner and advise NCWRC when the temporary danger buoy is in service.
3. If placed, retrieve the temporary LWMC danger buoy when NCWRC installs a new one.

### ***Missing Danger Buoys – South Carolina***

Report the missing danger buoy to Sergeant Mabry with location data as above at [Brent.Mabry@yorkcountygov.com](mailto:Brent.Mabry@yorkcountygov.com).



## **Safety**

### ***Electrocution Dangers***

**Stakeholders:**      **North Carolina Wildlife Resources Commission**  
**South Carolina Department of Health and Environmental**  
**Control (SCDHEC)**

Swimmers have been electrocuted in Lake Wylie in marina waters in the past and in lakes and rivers around the country in recent years.

The LWMC has distributed safety information provided by the Electrical Safety Foundation International (ESFI) to marina owners on Lake Wylie and the administrators of state Clean Marina Programs in North and South Carolina. These state officials are now determining the best way to disseminate this information to their participating marinas.

The ESFI brochure and flier are found in the following pocket page.



# ELECTRIC **SHOCK** DROWNING

## UNKNOWN DANGER LURKING IN THE WATER

Docks and boats carry sources of **electricity**. Faulty wiring or the use of damaged electrical cords and other devices can cause the surrounding water to become **energized**. NEVER swim near a marina or a near a boat while it's running.



There is **no visible warning** to electrified water.

Electric current in the water causes the **paralysis of muscles** which results in **drowning**.



The 2017 NEC now **requires** marinas and boatyards to have **ground-fault protection** to help prevent water electrification. Check to see if your marina, and the boats in the marina, have proper **GFCI protection**.



As little as **10 milliamps**, 1/50th the amount used by a 60 watt light bulb, can cause **paralysis** and **drowning**.

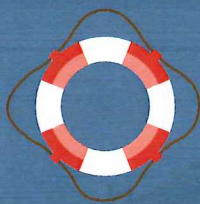


### WHAT TO DO IF YOU SEE **ELECTRIC SHOCK DROWNING** TAKING PLACE

Turn power **off**



Throw a **life ring**



Call **911**



**NEVER** enter the water



You could become a victim too.

**WARNING** – POTENTIAL SHOCK HAZARD: ELECTRICAL CURRENTS MAY BE PRESENT IN THE WATER

The 2017 National Electrical Code **requires** marinas and boat docks to post electric shock **warning signs** where electricity is used **near water**.



MAY IS NATIONAL ELECTRICAL SAFETY MONTH



[www.facebook.com/ESFI.org](https://www.facebook.com/ESFI.org)



[www.twitter.com/ESFI.org](https://www.twitter.com/ESFI.org)



[www.youtube.com/ESFI.org](https://www.youtube.com/ESFI.org)



# Marina Safety Checklist

Familiarize yourself with your marina and help prevent electrical hazards. Use this checklist to talk with the marina manager or owner about potential safety concerns:

Date: \_\_\_\_\_

☐ Are any cords cracked or frayed?  
Location: \_\_\_\_\_

☐ Is there corrosion or other damage on any of the power pedestals?  
Location: \_\_\_\_\_

☐ When was the marina last inspected?  
Inspections should be performed yearly.  
Inspection Date: \_\_\_\_\_

☐ What edition of the codes (NEC, NFPA, ABYC) does the marina comply with?  
Code Edition(s): \_\_\_\_\_

☐ What type of ground fault protection does the marina provide?  
Protection: \_\_\_\_\_

## Marina Contact Information

Manager: \_\_\_\_\_

Phone: \_\_\_\_\_

Address: \_\_\_\_\_

Power Source Location: \_\_\_\_\_

In case of emergency, call 911 or VHF Channel 16 immediately

For more information  
visit:

[www.esfi.org](http://www.esfi.org)

or email:

[info@esfi.org](mailto:info@esfi.org)

ESFi®

Electrical Safety Foundation  
International  
1300 17th St. N. Suite 900  
Arlington, VA 22209

# Boating & Marina Safety



Electrical Safety  
Foundation  
International



# 5 Tips for Boat Owners



**Swimming Safety** - Never allow swimming near the boat, marina, or launching ramp. Residual current could flow into the water from the boat, or the marina's wiring, potentially putting anyone in the water at risk of Electric Shock Drowning.



**Put It to the Test** - Be sure your boat is properly maintained and consider having it inspected annually. GFCIs and ELCIs should be tested monthly to ensure functionality. Conduct leakage testing to determine if electrical current is escaping the vessel.



**Use the Right Tool** - Never use household cords near water. Use only portable GFCIs or shore power cords (including "Y" adapters) that are "UL- Marine Listed" when using electricity near water.



**Know Your Surroundings** - Know where your main breaker(s) are located on both the boat and the shorepower source so that you can respond quickly in case of an emergency. Be aware of any potential electrical hazards by checking for nearby power lines before boating, fishing, or swimming.



**Learn the Code** - Regularly have your boat's electrical system inspected and upgraded by a certified marine electrician to be sure it meets your local and state NEC, NFPA, and ABYC safety codes and standards.

# Safety Device Guide

## What is a circuit breaker?

Circuit breakers are designed to detect faulty electrical conditions within electrical systems and interrupt current flow.

## What is a Ground Fault Circuit Interrupter (GFCI)?

These outlets or circuit breakers prevent shock and electrocutions by quickly shutting off power to the circuit if the electricity flowing into the circuit differs by even a slight amount from that returning.

## What is a portable GFCI?

A portable GFCI requires no special knowledge or equipment to install. Portable GFCIs should only be used on a temporary basis and should be tested prior to every use.

## What is an Equipment Leakage Circuit Interrupter?

ELCIs measure current flow within electrical wires and immediately switch electricity off if an imbalance of current flow is detected.

## What is a shore power cord or marine power cord?

Shore power cords and Y-adaptor cords are designed specifically for use near water to provide shore side electrical power to ships and boats while their main and auxiliary engines are turned off.

## What is a power pedestal or dockside electrical system?

A power pedestal or dockside electrical system is a power box designed with corrosion-resistant materials to provide electricity safely on the dock.



# Electric Shock Drowning

Electric Shock Drowning occurs when a body makes contact with electrified water and becomes a conductor of electricity leading to the possibility of complete loss of muscle control, rapid or irregular heart beat (ventricular fibrillation), and even electric shock death.

## Common Causes:

Docks and boats can carry sources of electricity. Faulty wiring or the use of damaged electrical cords and other devices can cause the surrounding water source to become energized.

## How to Avoid:

- Obey all "No swimming" signs.
- NEVER swim near a marina.
- NEVER swim near a boat while it is running.
- If you feel any tingling sensations while in the water, tell someone and swim back in the direction from which you came. Immediately report it to the dock or marina owner.

## How to Respond:

- Do not enter the water!
- Call 911 or VHF Channel 16 immediately
- If possible turn off all nearby power sources
- Extreme caution should be taken when removing the victim from the water.
- If the victim does not have a pulse and is not breathing begin CPR or use (AED) Artificial Electrical Defibrillator if available.



**DO NOT OPERATE** the vessel  
without doing the following:

✓ **Checklist** (each trip)

- ☐ Educate all passengers about carbon monoxide poisoning.
- ☐ Make sure all exhaust clamps are in place and secure.
- ☐ Look for exhaust leaking from exhaust system components, indicated by rust and/or black streaking, water leaks, or corroded or cracked fittings.
- ☐ Inspect rubber exhaust hoses for burned or cracked sections. All rubber hoses should be pliable and free of kinks.
- ☐ Confirm that water flows from the exhaust outlet when the engines and generator are started.
- ☐ Listen for any change in exhaust sound that could indicate an exhaust component failure.
- ☐ Test the operation of each carbon monoxide detector by pressing the test button. Make sure the battery is installed properly and is in good condition. Never remove the battery unless replacing it with a new battery.



**REMEMBER:**

**All carbon monoxide poisonings are preventable!**

**DO NOT OPERATE** the vessel  
without doing the following:

✓ **Checklist** (at least annually)

- ☐ Replace exhaust hoses if any evidence of cracking, charring, or deterioration is found.
- ☐ Inspect each water pump impeller and the water pump housing, and replace if worn. Make sure cooling systems are in proper working condition to prevent overheating and burn through the exhaust system. (Refer to the engine and generator manuals for further information.)
- ☐ Inspect each of the metallic exhaust components for cracking, rusting, leaking, or loosening. Pay particular attention to the cylinder head, exhaust manifold, water injection elbow, and the threaded adapter nipple between the manifold and the elbow.
- ☐ Clean, inspect, and confirm proper operation of the generator cooling water anti-siphon valve (if equipped).

*Annual checklist must be performed by a  
qualified marine technician.*

Produced under a grant from the Aquatic  
Resources (Wallop/Breaux) Trust Fund  
administered by the U.S. Coast Guard.



Information adapted from the Utah Division  
of Parks and Recreation and U.S. Department  
of Interior carbon monoxide brochure.

printed on recycled paper ♻️



**DANGER**  
**CARBON MONOXIDE**

**BOATERS:**  
**Protect**  
**Yourself from**  
**this Silent**  
**Killer!**

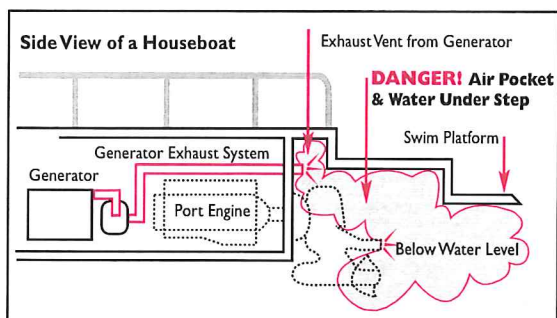
*Carbon monoxide can  
collect within, alongside or  
behind a boat in minutes in  
a variety of ways.*



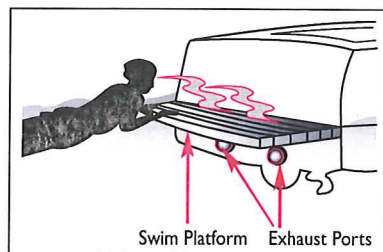


## Avoid These Death Zones!

**Swimming near or under the back deck or swim platform.** Carbon monoxide from exhaust pipes of inboard engines, outboard engines and generators build up inside and outside the boat in areas near exhaust vents. **STAY AWAY** from these exhaust vent areas and **DO NOT** swim in these areas when the motor or generator is operating. On calm days, wait at least 15 minutes after the motor or generator has been shut off before entering these areas. **NEVER** enter an enclosed area under a swim platform where exhaust is vented, not even for a second. It only takes one or two breaths of the air in this "death chamber" for it to be fatal.



Teak surfing, dragging and water-skiing within 20 feet of a moving watercraft can be fatal.



**Blockage of exhaust outlets** can cause carbon monoxide to accumulate in the cabin and cockpit area - even when hatches, windows, portholes, and doors are closed.

**Exhaust from another vessel** that is docked, beached, or anchored alongside your boat can emit poisonous carbon monoxide gas into the cabin and cockpit of your boat. Even with properly vented exhaust, your boat should be a minimum of 20 feet from the nearest boat that is running a generator or engine.

**Slow speeds or idling** in the water can cause carbon monoxide gas to accumulate in the cabin, cockpit, bridge, and aft deck, **even in an open area**. A tailwind (force of wind entering from aft section of the motorboat) can also increase accumulation.

**The "station wagon effect," or backdrafting** can cause carbon monoxide to accumulate inside the cabin, cockpit, and bridge when operating the boat at a high bow angle, with improper or heavy loading or if there is an opening which draws in exhaust.

This effect can also cause carbon monoxide to accumulate inside the cabin, cockpit, aft deck, and bridge when protective coverings are used and the boat is underway.

## What to do

Educate family and friends about carbon monoxide so they are aware of what the early poisoning signs are.

If your boat has rear-vented generator exhaust, check with the boat manufacturer for possible recall or reroute the exhaust to a safe area.

Assign an adult to watch when anyone is swimming or playing in the water.

Schedule regular engine and exhaust system maintenance inspections by experienced and trained technicians.

Keep forward-facing hatches open, even in inclement weather, to allow fresh air circulation in living spaces. When possible, run the boat so that prevailing winds will help dissipate the exhaust.

Do not confuse carbon monoxide poisoning with seasickness, intoxication, or heat stress. If someone on board complains of irritated eyes, headache, nausea, weakness, or dizziness, immediately move the person to fresh air, investigate the cause and take corrective action. Seek medical attention, if necessary.

Install a carbon monoxide detector in each accommodation space on your boat. Check detectors before each trip to be sure they are functioning properly. If the detector goes off, believe it!

## Facts

Carbon monoxide is a potentially deadly gas produced any time a carbon-based fuel, such as gasoline, propane, charcoal, or oil, burns. Sources on your boat include gasoline engines, generators, cooking ranges, and space and water heaters. Cold or poorly tuned engines produce more carbon monoxide than warm, properly tuned engines.

Carbon monoxide is colorless, odorless and tasteless and mixes evenly with the air. It enters your bloodstream through the lungs and displaces the oxygen your body needs. Early symptoms of carbon monoxide poisoning - irritated eyes, headache, nausea, weakness, and dizziness - are often confused with seasickness or intoxication. Prolonged exposure to low concentrations or very short exposure to high concentrations can lead to death.

Each year, boaters are injured or killed by carbon monoxide. Most incidents occur on older boats and within the cabin or other enclosed areas. Exhaust leaks, the leading cause of death by carbon monoxide, can allow carbon monoxide to migrate throughout the boat and into enclosed areas. New areas of concern are the rear deck near the swim platform with the generator or engines running and teak surfing or dragging behind a slow moving boat. Regular maintenance and proper boat operation can reduce the risk of injury from carbon monoxide.



## Safety

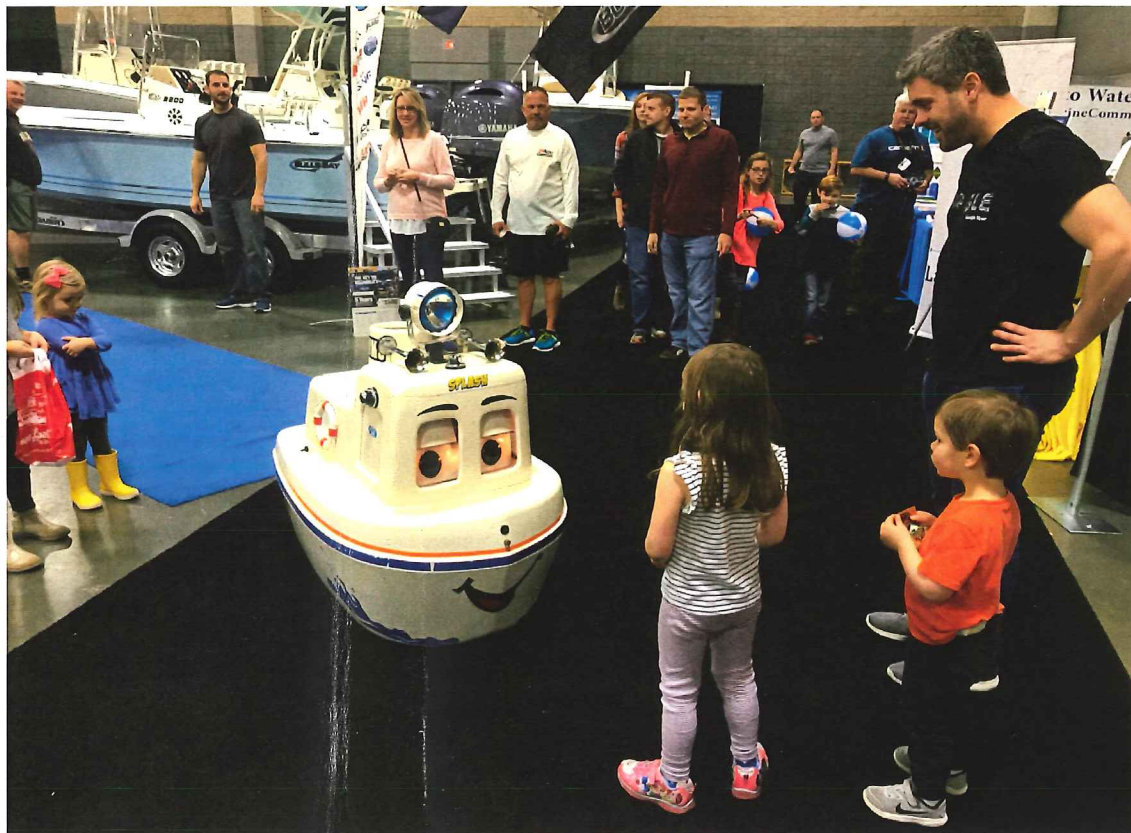
### ***SPLASH Into Water Safety***

**Stakeholders:** Lake Law Enforcement

In 2008 LWMC invested in SPLASH, a motorized, remote-controlled, miniature tug boat that's a big hit with kids... and lots of adults, too. SPLASH stands for **S**afety, **P**lanning, **L**earning, **A**wareness, **S**eamanship, and **H**eading.

SPLASH is operated by a former LWMC commissioner who emphasizes boating safety at community events, elementary schools, parades, and other functions, as well as at the annual Mid-Atlantic Boat Show at the Charlotte Convention Center.

SPLASH "talks" to the children and invites them to take stickers from his smoke stack. The stickers display water safety tips and the importance of wearing a life jacket.



## **Environment**

### ***Water Quality***

**Lake-wide since 1987**

**Belmont since 2016**

**Stakeholders:**      **Mecklenburg County Land Use Environmental Services Agency (LUESA)**  
                             **Catawba Riverkeeper Foundation (CRF)**

Representatives from Mecklenburg County Land Use & Environmental Services Agency (LUESA) provide a Lake Wylie Water Quality Report - the results and analysis of their bi-monthly sampling of Lake Wylie at various points throughout the lake.

The report provides an overall water quality assessment, rating each testing site with an overall score, swimming conditions relative to Fecal Coliform bacteria readings, and an Ecological Health rating using the North Carolina Trophic State index. A LUESA representative attends LWMC monthly meetings to provide updates and comments on the latest samplings, pollution events, wastewater spills, etc.

To expand this testing program to reflect a more comprehensive view of Lake Wylie water quality, the LWMC has contracted LUESA to add two additional sampling sites in South Carolina: the first at the mouth of Torrance Creek to monitor the Tega Cay sewage treatment facility; and the second located equidistant between Goat Island and Ebenezer Park swimming area.



# Lake Wylie

## Water Quality Report

### March 2018

Past Year

Lake Use Support Index

May 2017 – Mar 2018

#### Key:



**Lake Use Support Index**  
(Overall Water Quality)



**Swimmable** (Fecal coliform bacteria)

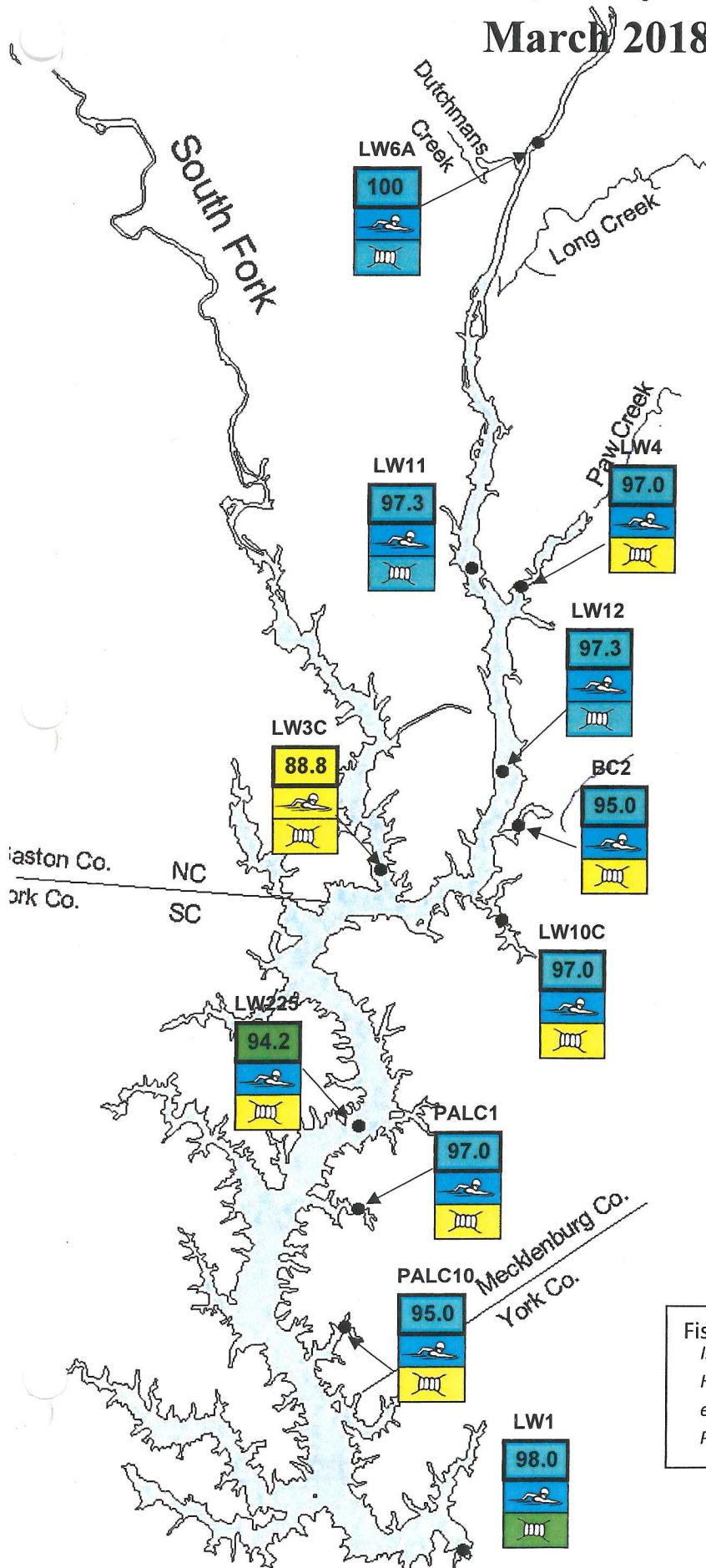


**Ecological Health**  
(NC Trophic State Index)

(Not shown: Metals, Turbidity, Field Parameters)

Supporting +	95-100
Supporting	90-95
Partially Supporting	70-90
Impaired	50-70
Degraded	<50

Data used for calculations were collected by Charlotte-Mecklenburg Storm Water Services at individual sites every other month (January, March, May, July, Sept., Nov.)



### Current Month Bacteria Results

Site	Date	Fecal Coliform (col./100 ml)	E. Coli (MPN/100 ml)
BC2	4/5	<1	1
LW1	4/5	<1	1
LW10C	4/5	<1	1
LW11	4/5	<1	4.1
LW12	4/5	<1	7.4
LW225	4/5	<1	4.1
LW3C	4/5	<1	15.8
LW4	4/5	<1	3
LW6A	4/5	<1	1
PALC1	4/5	NA	NA
PALC10	4/5	<1	8.6
Reference value		400	235

**Fish Consumption Advisories**  
Issued by the NC Div. of Public Health to protect citizens from exposure to contaminants like PCBs and mercury.



Largemouth Bass

For more information: [stormwater.charmeck.org](http://stormwater.charmeck.org)



# Lake Wylie

- Routine lake monitoring for March conducted on 4/5/18
- Average water temperature on day of sampling = 61.5 F
- Lake level on day of monitoring = 97.7 ft (target = 97.0 ft)
- Average water clarity on day of monitoring = 1.51 m (4.95 ft)

## **Routine Monitoring Sites**

BC2	Brown's Cove
LW1	Lake Wylie Dam
LW10C	Wither's Cove
LW11	Main channel, upstream of Paw Creek
LW12	Main channel, downstream of Paw Creek
LW225	Main channel at Buster Boyd Bridge (Hwy 49)
LW3C	South Fork Catawba River (at Hwy 273 bridge)
LW4	Paw Creek Cove
LW6A	Headwaters, upstream of Dutchman's Creek
PALC1	Boyd's Cove (Palisades)
PALC10	Snug Harbor Cove (Palisades)

## **Routine Lake Monitoring Efforts (every other month)**

<b>Physical Parameters</b>	<b>Wet Chemistry Analyses</b>
<ul style="list-style-type: none"> <li>• Secchi Depth in meters (water clarity)</li> <li>• Temperature (°C)</li> <li>• Specific Conductivity (µS)</li> <li>• Dissolved Oxygen (% and mg/l)</li> <li>• pH</li> <li>• Turbidity (NTU)</li> <li>• Chlorophyll A (RFU)</li> </ul>	<ul style="list-style-type: none"> <li>• Fecal Coliform Bacteria (CFU/100ml)</li> <li>• E.coli Bacteria (MPN/100ml)</li> <li>• Turbidity (NTU)</li> <li>• Nitrate/Nitrite (mg/l)</li> <li>• Ammonia (mg/l)</li> <li>• Total Phosphorus (mg/l)</li> <li>• Total Kjeldahl Nitrogen (mg/l)</li> <li>• Chlorophyll A (µg/l)</li> </ul>

Questions/Comments/More information? Please contact:

Dave Ferguson, Sr. Environmental Specialist [dave.ferguson@mecknc.gov](mailto:dave.ferguson@mecknc.gov)

# Raw Water Data for City of Belmont

ND = Non-Detect

## Average for Month

	Turbidity (NTU)	pH	Temperature (°C)	Hardness CaCO <sub>3</sub> (mg/L)	Iron (mg/L)	Coliform (per 100ml)
<b>Dec-16</b>	5.8	5.7	12.6	17.8	0.17	625
<b>Jan-17</b>	25.7	5.6	11.0	20.3	0.47	1201
<b>Feb-17</b>	10.1	5.7	13.1	18.6	0.30	426
<b>Mar-17</b>	8.0	5.8	15.0	18.6	0.21	243
<b>Apr-17</b>	16.4	5.8	18.9	17.8	0.33	1077
<b>May-17</b>	14.8	5.7	22.0	16.8	0.26	1447
<b>Jun-17</b>	12.9	5.8	25.7	17.2	0.23	1309
<b>Jul-17</b>	10.9	5.8	28.3	16.9	0.24	1304
<b>Aug-17</b>	13.2	5.8	27.8	16.8	0.29	1166
<b>Sep-17</b>	11.2	5.7	24.8	16.0	0.23	1222
<b>Oct-17</b>	15.5	5.7	22.6	15.4	0.22	969
<b>Nov-17</b>	4.2	5.6	17.9	14.6	0.12	464
<b>Dec-17</b>	3.3	5.6	13.6	15.4	0.12	506

**2018**

## Average for Month

	Turbidity (NTU)	pH	Temperature (°C/F)	Hardness CaCO <sub>3</sub> (mg/L)	Iron (mg/L)	Coliform (per 100ml)
<b>Jan-18</b>	4.1	5.6	9.9/49.8	15.6	0.11	434
<b>Feb-18</b>	23.7	5.5	12.9/55.2	15.9	0.33	846
<b>Mar-18</b>	10.8	5.5	13.5/56.3	16.7	0.24	473

## Water Quality Metrics

**Turbidity:** The measure of how dirty or cloudy the water is. It is reported in Nephelometric Turbidity Units (NTU). The lower the number the less turbidity. In general, a lake will fall in the range of 1-10 NTU. Rivers generally range from 2-2000 NTU.

**pH:** pH is a measure of how acidic or basic something is. The lower the number the more acidic it is. The scale runs from 0-14. Source water generally runs between 5.5-7.0. Drinking water is usually between 6.5-8.5.

**Hardness:** We measure hardness using a calcium carbonate ( $\text{CaCO}_3$ ) scale. A reading of 0-60 indicates soft water. It is measured in milligrams per liter which is roughly equivalent to parts per million (ppm). One ppm is equivalent to one car in bumper to bumper traffic from Charlotte, NC to Los Angeles, CA.

**Iron:** This is the measure of ferrous (or soluble) iron in the water. Expressed in mg/L.

**Coliform:** We measure the number of coliforms (a type of bacteria) in the water as an indicator of the amount of microbiological life in the water. This is not a measure of any other bacteria, virus, or other microorganism. It is simply an indicator that they may be present.

Any increases in turbidity, iron, and coliform are primarily caused by runoff from precipitation. As rain runs, it tends to pick up contaminants (dirt, animal feces) and carry them down to rivers and lakes. These then appear as turbidity, iron, & coliforms in the test results. When you have an increase in turbidity you would expect an increase in iron and coliforms. Rivers tend to experience greater changes during runoff periods than lakes. While our average turbidity increased to 25 NTU from 6 NTU in January 2017, a lake might only see an increase to 4 NTU from a 2 NTU. A lake is able to absorb runoff because of its larger volume. Increases in these contaminants can also be caused by drought (and recovery from drought). If a river level is low and then receives a large volume of runoff or an increase in flow from upstream, then the sudden extra flow can "scour" the river bottom and stir up anything that had previously settled on the bottom. So while increases in our source water contaminants are often primarily caused by runoff from precipitation events, they do not have to be.

Increases in turbidity, iron, & coliforms are caused by combination of precipitation runoff and an increase in river flow. They are not unexpected.



## Environment

### *Riversweep*

Since 2002

**Stakeholders:**      **The Catawba Riverkeeper Foundation**  
                                 **Local Volunteers**

2018 is the sixteenth year of Riversweep, the annual clean-up event of Lake Wylie's 325-mile shoreline. Volunteers will come from the three-county region surrounding the lake and beyond on Saturday, October 6th, from 8 AM to 12 PM.

About 700 to 1000 volunteers are expected to participate each year. Boat owners serve as Boat Captains to shuttle volunteers who retrieve the trash and debris from the shoreline. From one of the 12 site locations around Lake Wylie, volunteers receive a Riversweep T-shirt, trash bags and grabbers, work gloves, and bottled water, and an assigned area of the shoreline to clean. They are taken on boats and by vehicles to the designated areas. Still others paddle kayaks into shallow creeks and coves.

The benefits of Riversweep to communities, municipalities, counties, and the region are significant. A lake with a healthy ecosystem, one that is free of trash, debris, and hazards to navigation, is essential to building and maintaining a strong regional economy.

Sixteen years later, Riversweep has transcended a simple community clean-up project. The event's appeal can be seen as new volunteers join those who return every year. They experience hands-on stewardship and a personal commitment to the community.

Riversweep makes a difference: the amount of trash and debris collected in recent years appears to be less than in the earlier years. Nonetheless, the need for this annual clean-up is on-going as the data on the next page show.



# Lake Erie Riversweep Trash Collection 5-Year Comparison

October 2017

	2012	2013	2014	2015	2016	2017
	32,000 lbs. = 16 tons	42,305 lbs. = 21 tons	29,000 lbs. = 14.5 tons	drought-canceled event	3 LG Construction-size dumpsters	4 LG Construction-size dumpsters
Volunteers	1,100	859	1,000		239	654
# of Site Locations	13	14	14		13	14
Number of Dumpsters	11	12	12		10	13
Auto tires	81	138	109		38	110
Bags of trash	?	528	646		189	503
Bags of recyclables – plastic & aluminum	100 +	180	73		45	49
Auto batteries	1	4 + 1 jet ski battery	1		-	Outboard motor
Pieces of lumber	-	12 large tree trunks	49 pcs. & 3 lg. tree limbs		-	113
Plastic/metal 50-gallon barrels	-	18	10		12	22
Plastic/metal pcs., chairs, cans, etc.	-	12	21 plastic chairs		-	17
Kitchen equipment	-	-	20 ft. PVC pipe		-	Outdoor grill
Dead animals	-	-	2		-	-
Heavy Styrafoam® boat docks blocks	-	-	82		31	25
Chain link fencing	8-ft. livestock gate	-	Chain link fencing,		25-ft. gutters	12 ft. x 4 ft. gate
<b>MISC</b>						
	1 boat seat	3 boat seats	1 boat captain's chair		1 kayak & 1 wake board	1 jet ski seat
	3 sets of window shades	3 metal grills	4 coolers & 2 pool noodles		Sliding board	1 Crock Pot
	2 dock ladders	car axil and bumper	1 car axil		1 diesel piston	1 car hood
	1 bed mattress	Set of end tables	2 vehicle gas tanks		Infant car seat	1 steering wheel
	2 propane tanks	hydraulic jack	22 propane tanks		Fire hose, Hwy 279 sign	1 boat gas can
	1 handicap commode	2 swing sets	18 dock flotation sections		Birdhouse	2 kiddie swimming pools
	7 chairs with an umbrella	4-pc. Set of lawn furniture	1 Wrought iron café table and 5 chairs			1 bicycle
	2 broken buoys	3 broken buoys	1 no wake buoy			1 metal fish attractor, 1 buoy
	An artificial potted palm	Plastic truck bedliner	1 hot water heater			Fire extinguisher
	1 bottle of vodka, unopened	1 18-ft sail boat hull 1 14-ft sail boat hull	Snowboard, snow sled and 2 boogie boards			1-7ft x 7ft floating dock 18 ft. of boat decking
		15-ft floating dock	Hobby horse			2 fishing poles



## **Environment**

### ***Clean Marinas***

#### **Since 2008**

**Stakeholders:**      **North Carolina Wildlife Resources Commission (NCWRC)**  
                             **South Carolina Department of Health and Environmental**  
                             **Control (SCDHEC)**  
                             **Marina Owners in North and South Carolina**

With the assistance of a NCWRC official who administered the state's coastal Clean Marina program, the LWMC developed a voluntary program of environmental and safety standards for the marinas on Lake Wylie. No inland lake marina program existed at the time. The LWMC's program was designed to be applicable and relevant to marinas in both states.

In South Carolina, the state's Clean Marina Program is a voluntary, fee-based certification program with an education course requirement for owners. Currently, there are no Lake Wylie marinas in South Carolina enrolled in this program; none of the owners recently queried were interested in joining the state program.

Today, there are eight (8) marinas (out of a total of eleven (11)) in both North and South Carolina that fly the LWMC Clean Marina flag, designating the owners' commitment to environmental and safety standards. Recently, the NCWRC has assigned a representative to oversee the relatively new North Carolina Clean Marina Program, which has just one marina on Lake Tillery enrolled. The LWMC is actively supporting the transition of the North Carolina marina owners on Lake Wylie to join the state program.

Unless or until South Carolina alters the current fee and education requirements of their program, LWMC will continue to offer the Clean Marina program to South Carolina marinas on the lake.

## Environment

### *Grass Carp*

Since 2008

**Stakeholders:**     **Duke Energy**  
                              **North Carolina Wildlife Resources Commission (NCWRC)**  
                              **South Carolina Department of Natural Resources (SCDNR)**

Hydrilla, an introduced, submersed aquatic plant that can grow to 25 feet in length and form dense floating mats along the water surface, became a serious problem more than a decade ago in a number of lakes in North and South Carolina. With its extremely fast growth rate - about an inch a day - the potential of this noxious weed to cover an entire reservoir and restrict fishing, swimming, boating, and other water recreation required intervention.

To combat Hydrilla, LWMC joined Duke Energy, NCWRC, and SCDNR in a coordinated effort to combat this non-native plant through the use of selected herbicide applications and the introduction of Triploid (sterile) grass carp for long-term control. As the grass carp consume Hydrilla and reduce its presence, potentially other forms of native vegetation could become established.

LWMC has provided funds to purchase grass carp for this eradication program. In recent years, 200 carp were introduced into Lake Wylie in 2016; in 2017, just 90 carp were required to maintain Hydrilla suppression. This year, based on Duke's assessment of Hydrilla control, no additional carp were needed.





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## Environment

### Lake Research Program

2018

**Stakeholders:**        **Lake Wylie Residents**  
                              **Duke Energy Lake Services**

The goal of this year's research is to define and develop an agricultural program that will decrease erosion, stabilize shoreline buffers, and mitigate sedimentation in Lake Wylie.

Ms. Ella Beth Wickliff, a graduate student at the University of North Carolina, Charlotte, is conducting the research. Dr. Sandra Clinton, Research Assistant Professor at the university, is overseeing her work.

Ms. Wickliff will survey similar programs that have been implemented on other lakes in the region and will summarize the overall effects of native shoreline vegetation on controlling sediment inputs to lakes and reservoirs. Further examination will include the following:

- cataloging current sediment sources by county
- analyzing the effect of fluctuating water levels on sedimentation
- identifying native wetland and aquatic plants
- evaluating relevancy of previous studies to Lake Wylie
- reviewing effectiveness of previous efforts to stem erosion/sedimentation

Project deliverables to include:

- summary of literature review
- recommendations for courses of action/projects to address sediment input to the Lake Wylie. Recommendations include a timeline and projected results
- summary of the implementation and maintenance costs for these projects
- list of potential local, state, and federal entities who could underwrite these activities.
- recommendation for public outreach information and activities.

## **Legislation and Law Enforcement**

### ***NC Senate Bill S434***

**Stakeholders:**      **Citizens of Lake Wylie and the Catawba Basin**

In 2017, the LWMC opposed proposed legislation, NC Senate Bill S434, to virtually eliminated the riparian buffer along the Catawba River and its lakes, including Lake Wylie.

LWMC sent letters to the House representatives to express our strong opposition to this bill because of the importance of shoreline buffers in reducing storm water runoff and damaging sedimentation of this public waterway. (Sample letters attached.)

The bill failed in the NC House.

LWMC remains vigilant in protecting the water quality of Lake Wylie by monitoring proposed legislative actions by both municipal and state governments in North and South Carolina.



# LAKE WYLIE MARINE COMMISSION



May 4, 2017

Dear Representative Beasley:

The Lake Wylie Marine Commission (LWMC) opposes sections 7.2 and 2 of Senate Bill S434 that would remove protections of the riparian buffers in Gaston and Mecklenburg counties and throughout the Catawba River basin.

As a state-sanctioned, governing board that oversees health and safety concerns on Lake Wylie, LWMC strenuously objects to the language in this bill, specifically:

- Section 7.2 – repealing the 50-foot protective water quality buffer along the main stem of the Catawba River and its reservoirs.
- Section 2 – repealing buffers passed by local municipalities, regardless of whether those buffers applied to streams or expanded the Catawba River buffer.

Our opposition to the language in this bill is based on the LWMC mandate as stated in our mission statement: *To promote public policies and support regulations for the preservation of Lake Wylie and its wildlife and for the education and safety of the citizens who use this beautiful natural resource.*

Furthermore, the state of North Carolina's own Department of Environmental Quality (DEQ) acknowledges and supports the benefits of buffers; LWMC agrees. Enactment of S434 is contrary to proven science and approved public policies of this state. Reversal of current buffer protections will be extremely detrimental to the water quality and the environment of Lake Wylie.

Do not allow sections 7.2 and 2 to remain in S434. Please strip this harmful language from the bill and help us continue to preserve Lake Wylie.

Respectfully,

A handwritten signature in black ink, appearing to read "Lynn L. Smith".

Lynn L. Smith  
Chairman, Lake Wylie Marine Commission

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# LAKE WYLIE MARINE COMMISSION



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## LAKE WYLIE MARINE COMMISSION



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## **Legislation and Law Enforcement**

### ***Support for Lake Law Enforcement Agencies***

**Since 2007**

**Stakeholders:      Lake Wylie Residents and Boating Public**

LWMC has actively supported law enforcement agencies in the three counties surrounding Lake Wylie in a variety of ways.

LWMC was instrumental in creating the southern law center office and boat dock. Since its inception, the Commission has paid the center's expenses including utilities, insurance, and maintenance.

Charlotte Mecklenburg Police Department received funds from LWMC to purchase dive gear to aid in deep water rescue situations.

LWMC provided funds to upgrade underwater sonar equipment on the Gaston County Police Boat, which enables the Law Enforcement officers to assist in drowning rescue and recovery.

LWMC is actively pursuing a site for the northern law center office and docking facility for the Gaston County Police Boat, which is currently kept on a trailer.



**Pollution**  
***Sedimentation***  
**2017**

**Stakeholders:   Catawba Riverkeeper Foundation (CRF)**  
**Lake Wylie Residents**  
**Citizens Recreating on Lake Wylie**

Sediment, as a contaminant in storm water runoff, is the number one source of water pollution in the country. Destabilized land, particularly on construction sites where clear-cutting and mass grading, results in acres of soil exposed to rainfall and result in erosion. When storm water is allowed to leave a construction site, it carries sediment and other pollutants with it, flowing into streams, creeks and storm drains, and ultimately into Lake Wylie.

Sediment and associated pollutants including Fecal Coliform and E.coli Bacteria, and various nutrients affect physical characteristics as well as the chemical makeup of the lake's water. Sediment clouds the water and creates turbid conditions that reduce dissolved oxygen and change the water temperature and pH – all detrimental to aquatic wildlife.

Fecal Coliform and E.coli Bacteria are known health risks when the public is exposed to water containing unsafe concentrations of the bacteria. Nutrients such as Phosphorus, Nitrate and Ammonia further degrade the water and its ability to support biological productivity. Mammals, birds, fish, amphibians, reptiles, insects, invertebrates, flora and trees all need water quality that is not impaired.

LWMC partnered with Catawba Riverkeeper Foundation (CRF) to work with York County staff to revise the county's storm water and erosion ordinances, to raise protection standards to be comparable to neighboring counties including those that border Lake Wylie. CRF has been successful in assisting other counties in North Carolina undertake similar revisions, incorporating storm water management "Best Practices" to positive effect.

Nine months after initial discussions, the York County's ordinance rewriting process is about to begin.

## **Pollution**

### ***Debris Dumping***

**2016**

**Stakeholders: Duke Energy Lake Services**

In early 2016, LWMC received reports of contractors clearing land, piling the logs and tree debris on barges, then dumping them into the lake.

Both the North Carolina and South Carolina laws categorize this practice to be illegal littering (in addition to being a navigational hazard as well.) Allegedly the practice was started years ago by word of mouth. A contractor is said to have contacted an unknown Duke official to see "... if it'd be OK to dump logs in the deepest part of the lake as long as they'd sink."

This folklore spread and the illegal activity continued until LWMC apprised Duke Energy Lake Services of the situation. They promptly sent notices to all contractors to cease the practice.

## **Pollution**

### ***Tega Cay Sanitary System Overflows***

**2014 - 2017**

**Stakeholder**      **South Carolina Department of Health and Environmental Control (DHEC)**

A history of recurring sanitary system overflows (SSOs) into Lake Wylie from the Tega Cay sewer system spurred LWMC to begin monitoring the corrective action mandated by DHEC in a Consent Order issued to Utilities, Inc., the company operating the system. That company sold the system to the City of Tega Cay in June 2014. The LWMC received monthly reports from the engineering firm overseeing the repairs and continued tracking their progress until all work was completed in early 2017.

Since the repairs have been completed, there have been few SSOs from the Tega Cay system.



## **Pollution**

### ***Allen Steam Plant Coal Ash Basins***

**2016 - present**

**Stakeholder:**            **North Carolina Department of Environmental Quality (DEQ)**  
                                 **Duke Energy Lake Services**

Because of the major coal ash spill into the Dan River, the LWMC began tracking the status of the coal ash basins at the Allen Steam Plant and reviewed the January 2016 report of the North Carolina Department of Environmental Quality (DEQ) titled "Coal Combustion Residual Impoundment Risk Classifications." The report evaluates the impoundments that contain coal ash at Duke Energy's fossil fuel plants. There are three primary categories that were used to evaluate each impoundment are:

- Structural Integrity
- Impact to Surface Water
- Impact to Groundwater

The Allen Steam Plant has an Active Ash Basin and a Retired Ash Basin. The Overall Risk Classification DEQ proposed for both in 2016 was "Low to Intermediate." The other risk classifications are "Intermediate" and "High."

The LWMC focused on the structural integrity and the impact to surface water; groundwater contamination is not in the purview of the Lake Wylie Marine Commission.

**Regarding the key Surface Water Impact**, the DEQ reported that the Allen impoundments are not located within the 100-year floodplain; there is low risk of flooding with coal ash washing into the lake.

**Regarding the Dam Safety Factor**, both the active and retired coal ash basins were assessed to be **HIGH RISK** until repairs were made. The LWMC tracked the repairs to the impoundments and basins which included tree removal, slope remediation and grading, grout pipe, replacing sluice lines, and installation of new spillways.

## **Pollution**

### ***Allen Steam Plant Coal Ash Basins - continued***

Those repairs were completed in late 2016, the overall risk assessment cannot be reduced to “LOW” because the groundwater issue is not yet resolved. The LWMC believes it is important to note:

Water samples taken at the discharge of the Allen Steam Plant coal ash basin to Lake Wylie showed no adverse coal combustion residuals readings.

### **Present – spring 2018**

Duke Energy has advised that no further coal ash will be sent to the two basins and that the ash they will be either capped or removed.

Duke Energy has updated the LWMC on construction plans to add new, lined holding and retention basins for the coal ash at the Allen Steam Plant. The LWMC has concurred in those plans.

## **Education and Public Relations**

### ***LWMC Web Site***

The LWMC web site was redesigned in spring 2017 on a new platform with improved functionality and accessible from all mobile devices. The site features information on the work of LWMC, its programs and partnerships, who to call for a range of safety and environmental issues.

### ***Media Contacts***

One of the LWMC 2017-18 goals has been to cultivate media contacts in local broadcast and cable television as well as radio, print, and social media. With contact information, we have assembled an email list which can be activated to distribute safety and environmental notices and public information. Currently, we have relationships with WBTV and Spectrum News for on-camera interviews and program promotions.

### ***Public Service Announcement (PSA)***

The Riversweep cleanup event has distributed a PSA to broadcast and radio media outlets for the past seven years. For 2018, the PSA is being revised and repositioned to appeal to a younger audience on multiple media platforms. The development of this 30-second spot will produce enough images, video and promotional material to compile a promotional spot to launch on the LWMC web site.

### ***Chamber of Commerce Memberships***

Chamber meetings give LWMC Commissioners networking opportunities to present the work of LWMC to business leaders from a variety of local communities. Currently, LWMC holds memberships in Montcross Area Chamber of Commerce in Belmont and Lake Wylie Chamber of Commerce in Lake Wylie,

### ***Public Outreach***

LWMC Commissioners brief community organizations on the information contained in this notebook to raise awareness and educate the citizens of the region..