

## **RIVER BASINS & INTERBASIN TRANSFER (IBT) BASICS**

- What is a river basin?
  - Why is a river basin an important natural or ecological feature?
  - What is an interbasin transfer (IBT)?
  - How does the State of North Carolina control interbasin transfer (IBT)?
- 
- What is a river basin?

North Carolina is a large and beautiful state. The many rivers, lakes, streams, and wetlands in North Carolina are an important part of the State's natural beauty. The rivers, lakes, streams, and wetlands of the State are important for the health and enjoyment of its people, the production of food, the generation of power (such a waterwheel to run a mill and water power to generate electricity), and the operation of businesses that depend on the water (fishermen, water-based recreation such as canoeing). These bodies of water and related wetlands are also important to the plants, birds, fish, and wildlife that live in, on, or near the water or wetland and that depend on the water or wetland for food, to give birth to young, or as a habitat (a place to live).

### **River Basin – Land and Waterways.**

The land around the tributaries that flow into a river or other larger body of water, the tributaries or smaller bodies of water, the land around the river or other larger bodies of water, and the river and other larger body of water are, all together, called a "river basin." The river basin is usually named to reflect the biggest or most dominant body of water in the basin.

For instance, the Cape Fear River basin includes:

**(Waterways)**

the Cape Fear River and

the tributaries or smaller bodies of water that flow naturally into the Cape Fear River

**(Land Area)**

the land from which rain, melted snow, or other liquid would flow or "drain" naturally to the Cape Fear River or one of its tributaries

### **Ecology - The Natural System**

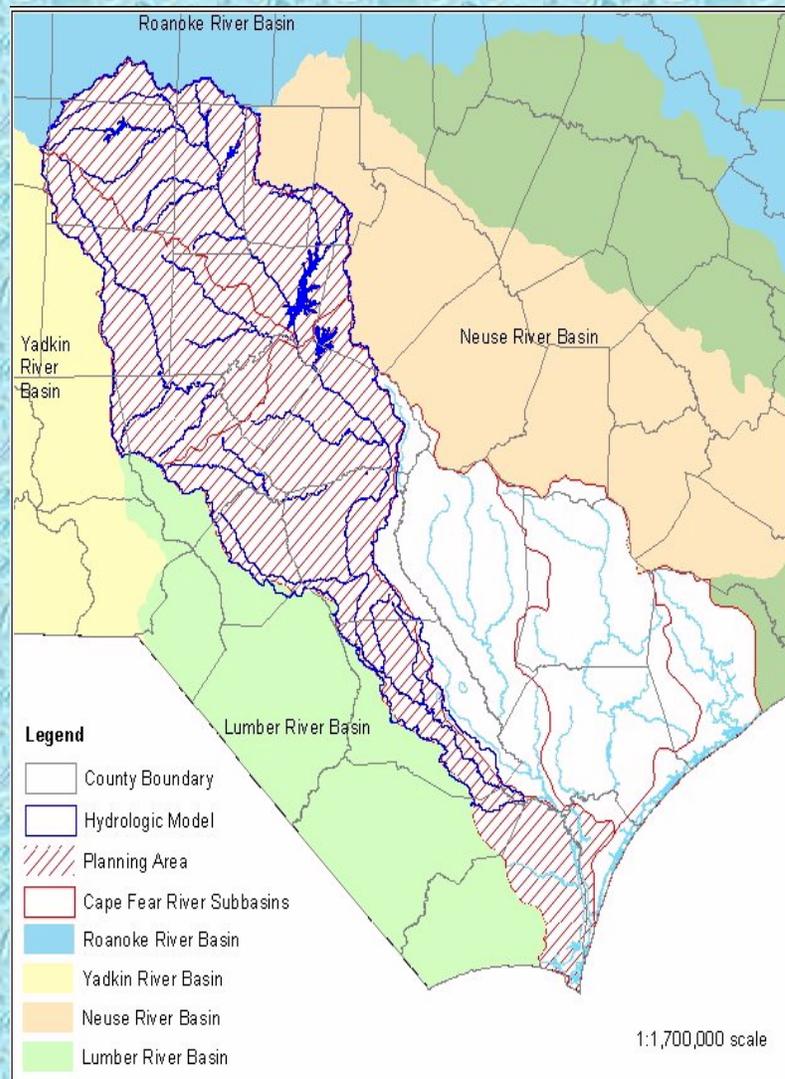
In nature;

- the rivers, lakes, and other waterways and wetlands are connected to each other so that, in most instances, the tributaries or smaller bodies of water (lakes, streams, and ponds) flow into larger bodies of water such as rivers and, in turn, to a very large body of water such as a sea or ocean.

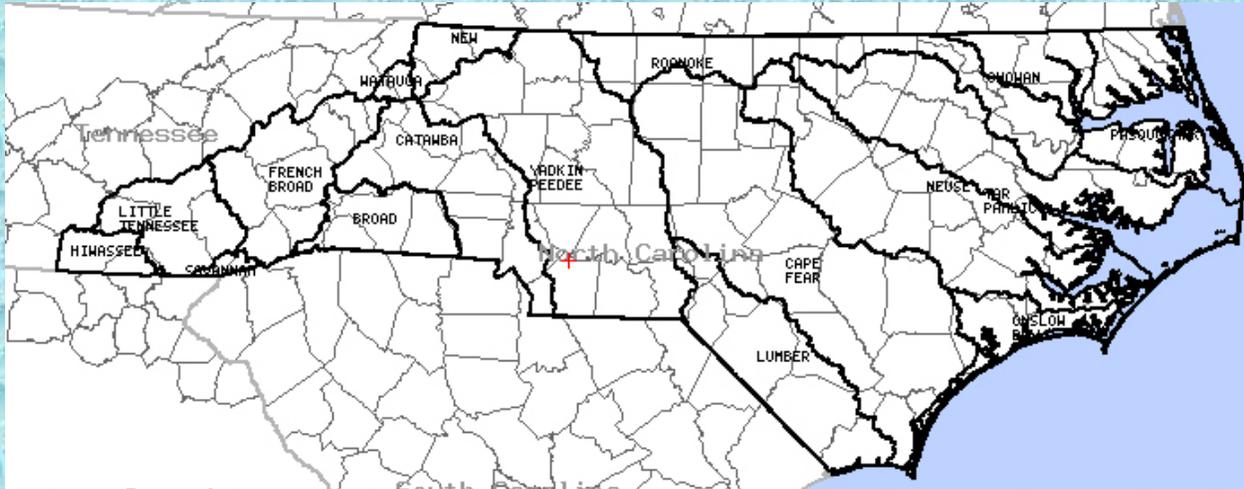
- North Carolina rivers, lakes, and waterways flow, in general, in a southern or eastern direction toward the ocean or sea. (and)
- the contours or “ups and downs” of the surface of the earth are such that the rain, melted snow, and other water that falls on the surface of the earth and the smaller waterways tend to flow in a particular pattern toward a river or other large body of water.

**This is an illustration of the Cape Fear River Basin.**

The map of the Cape Fear River Basin (in cross hatch and white) shows the tributaries or smaller bodies of water and several larger waterways that flow into the Cape Fear River. The Cape Fear River ends as it flows into the Atlantic Ocean.



This is an illustration of the major river basins in North Carolina.



\* [N.C.G.S. § 143-215.22G](#) provides a list of the major river basins and the sub-basins in North Carolina. This list is used to implement the interbasin transfer controls.

- Why is a river basin an important natural or ecological feature?

A river basin is an important natural or ecological feature because it is an ecosystem. Within the river basin ecosystem; the plants, animals, birds, and wildlife and non-living natural elements such as the soil are connected and interdependent. The plants, animals, birds, and wildlife rely on the “balance” within the ecosystem for food, water, habitat, and well-being. People are also dependent on the ecosystem “balance.” However, people have a greater ability to adjust to the changes in the ecosystem, to make changes to the ecosystem, or to move to a more favorable location.

The river is the primary component in the ecosystem because it links the other natural features and elements on the surface and, to a somewhat lesser extent, below the surface. Changes in the volume, pattern of flow, volume of flow, and character or quality of the river water can have a significant positive or negative impact on the river basin ecosystem: These changes to the natural pattern of water flow can affect the plants, fish, birds, and wildlife that use the waterway or wetland and the people who use and rely on the water resource.

- What is an Interbasin Transfer (IBT)?

North Carolina State law, N.C.G.S. § 143-215.22G(3), defines a (river basin) “transfer”:

(3) "Transfer" means the withdrawal, diversion, or pumping of surface water from one river basin and discharge of all or any part of the water in a river basin different from the origin. However, notwithstanding the basin definitions in G.S. 143-215.22G(1),\* the following are not transfers under this Part:

- a. The discharge of water upstream from the point where it is withdrawn.
- b. The discharge of water downstream from the point where it is withdrawn.

### The "Cork Rule."

In order to gain a clearer understanding of a river basin as an ecological unit and of an "interbasin transfer," imagine a giant cork on a water journey. Drop a giant cork into a tributary waterway which has a natural water flow that is not blocked or altered by a manmade structure such as a dam or a natural obstruction such as fallen trees. The giant cork can be expected to float with the current of water from tributary or smaller body of water, into the river or a larger and more dominant body of water in the river basin, and finally into a very large body of water such as the Atlantic Ocean. If the giant cork is able to make such a water journey, then all of the water travel will have been within the same river basin.

When the water flow or the relation between one point on a waterway (such as the intake point where water is taken into the water supply system for treatment) and a second point on a waterway (such as the release point where water that has been used by households, businesses, and industry is returned after it has been treated) is such that the giant cork could bob and float with the natural flow of the water from the beginning or intake point to the ending or release point, then all of the waterways are in the same river basin and there is no "interbasin transfer" or IBT.

Now, look at an event in the real world.

- A town or city removes water from a point (the intake) on the river and pipes the water to a treatment plant so the water can be treated and made safe for people to drink.
- The town or city then pipes the safe drinking water to homes so that families can use the water for cooking, bathing, and daily activities and to businesses so that the water can be used for economically productive activities.
- The "used" or waste water from the homes and businesses will then go down the drain at the home or business and be piped by way of a second set of pipes to a waste water treatment plant where it can be filtered and

treated to be made clean enough to be released into a waterway again (the release point).

If the giant cork could not bob and float in the waterway or waterways from the intake point to the release point, it is likely that the intake point and the release point are not in the same river basin. If the proposed intake point and the proposed release point are not in the same river basin, the laws and rules that govern “interbasin transfer” must be reviewed to determine if State approval will be required.

The water travel of the giant cork helps to visualize the flow of water within a river basin and to better understand the concept of an interbasin transfer (IBT). The engineers, planners, and other environmental professionals who work with water planning, water supply, and related projects must make complex decisions. These professionals apply the specific law and the rules that define when an interbasin transfer will require approval by the State. The engineers, planners, and environmental professionals also use river basin maps and other more complex and precise scientific analysis, tools, and methods to make decisions and determinations about a proposed interbasin transfer.

### Ecology and Regulation.

A river basin is an ecological feature and is defined by the state or conditions of nature. Boundaries such as state lines are the result of decisions made by elected officials or caused by political or other events not directly related to nature. As indicated by the above illustration of the North Carolina river basins, a river basin does not follow the lines that have been set to mark county, state, or other political boundaries. Some of the river basins in North Carolina begin or end in other states.

However, laws and rules “define” river basins for purposes such as fixing legal rights and making permit decisions. These laws, rules, or other formal systems sometimes reflect minor differences in the boundaries of a river basin depending upon factors such as the information available at the time of the enactment, the purpose of the regulation, political decisions, changes in the natural system over time, and the policy or prescribed method of making the delineation (such as the level of the “HUC” or “hydrologic unit code” used to delineate the area).

A river basin is an important ecological feature for several reasons. One reason is that the water flows in a natural pattern that, at most times, meets the needs of the plants, animals, and wildlife that depend on the river, waterway, or wetland for food and habitat and the needs of the people who depend on the water resource for food, recreation, and activities that generate money or value. Droughts, floods, and storms such as hurricanes are extreme conditions of nature and sometimes cause an interruption in the use of the waterway or wetland for food,

habitat, or making money; cause injury to people; or cause damage or loss of property and money.

The basic assumption is that the natural condition of the river or wetland is the way that the river, waterway, or wetland better serves the plants, fish, or wildlife that live in or on it and the people who rely upon it for food, recreation, or productive activity. The laws that govern the use of water in North Carolina generally reflect this view.

However, people sometimes choose to alter the natural path or flow of the waterway in an effort to reduce the possibility of injury to people, loss of property, or interruption of other ways that people rely on the river, waterway, or wetland. And, people also alter the natural path or flow of the waterway, river, or wetland in an effort to provide a water supply, an energy source, food resources, or ways to produce goods and products that make money. For instance, people create a dam so that the ability of the water to make power such as electricity can be increased, made more efficient, or caused to be more reliable. People take large quantities of water from the river or stream to provide drinking water for a city or town or to provide the water needed for the operation of a large business. These changes to the natural pattern can be such that the river, waterway, or wetland will no longer meet the needs of the plants, animals, fish, wildlife, or people who relied on the natural conditions of the river, waterway, or wetland for food, habitat, water supply, or other natural or business purpose.

The possibility that an unintended or unsatisfactory interruption to the natural system could occur is increased when the changes include taking water from one river basin and returning or placing it in another river basin. The removal or diversion of water from one river basin and the return or placement in another river basin is called an “interbasin transfer” (IBT). Because an IBT presents the possibility of threatening the well-being of the fish, wildlife, or people that depend upon a river, stream, or wetland; the North Carolina General Assembly and State government have established laws, rules, and procedures that apply when an IBT is proposed.

- How Does the State of North Carolina Control Interbasin Transfer (IBT)?

Laws. The North Carolina General Assembly is the body of elected officials that makes the laws for the State of North Carolina. The North Carolina General Assembly has enacted a law related to IBT.

The IBT law; [North Carolina General Statute, Section § 143-215.22L](#) -

- provides a specific definition of an IBT that will be governed by the law:
  - ❖ a transfer of 2 MGD (million gallons per day) or more;

- ❖ an increase in an existing transfer by 25% or more above the average daily amount transferred during the year ending July 1, 1993 when the total transfer is 2 MGD or more;
  - ❖ an increase in an existing transfer above the amount authorized by the EMC by certificate issued under North Carolina General Statute § 162A-7 prior to July 1, 1993.
- requires that any person, city, town, company, or other applicant that proposes to create an IBT (as IBT is specifically defined by the law) must secure a permit from the North Carolina State government, (and)
  - establishes the requirements of public notice and other procedures.

**Permitting.** The Environmental Management Commission (the EMC) is the State regulatory agency designated by law to implement or carry out the IBT law. The EMC has adopted rules and procedures that are consistent with the IBT law and add the more detailed policies and procedures required to implement or carry out the law enacted by the North Carolina General Assembly. The EMC has the authority to approve or to deny an application for an IBT.

The rules and procedures adopted by the EMC are set out in the [North Carolina Administrative Code, Chapter 15A, Subchapter 2E, Rules .0401 and .0402](#). North Carolina Administrative Code, Section 15A NCAC 02E .0401(a) provides instruction regarding the determination of the amount of water proposed to be transferred:

(a) Pursuant to G.S. 143-215.22G(3), the amount of a transfer shall be determined by the amount of water moved from the source basin to the receiving basin, less the amount of the water returned to the source basin.

**Review.** The Department of Environment and Natural Resources, Division of Water Resources (DWR) is the State government staff agency that assists the applicants and the Environmental Management Commission in the review and evaluation of an application for IBT.

The IBT applicant must provide detailed information in its application for an IBT so that the EMC, the DWR staff, and others interested in or affected by the proposed IBT can evaluate the proposed changes and the likely impact on the fish, birds, wildlife, and people that rely on the natural or current flow of an affected river, stream, or wetland for food, water, habitat, or recreation. The preparation and public dissemination of environmental evaluation documents such as an Environmental Assessment (EA) and, when warranted, a more detailed Environmental Impact Statement (EIS) provide substantial information about the proposed IBT, projected impacts, project alternatives, and mitigation

measures. Public notice, public hearings, opportunity to inspect and review all public documents, and the public comment period provide the opportunity for the public to learn about the project and to participate in the decision-making process.

## **TERMS**

**Ecological Unit** – A relationship in nature such that the living things and natural elements are connected and interdependent.

All the organisms in a particular region and the environment in which they live. The elements of an ecosystem interact with each other in some way, and so depend on each other either directly or indirectly.

(<http://www.ucmp.berkeley.edu/glossary/gloss5ecol.html>)

**Ecosystem** - a biotic community and its surroundings, part inorganic (abiotic) and part organic (biotic), the latter including producers, consumers, and decomposers. (<http://www.terrapsych.com/ecology.html>)

**Habitat** - The place and conditions in which an organism lives.

(<http://www.ucmp.berkeley.edu/glossary/gloss5ecol.html>)

**HUC** (United States Geological Survey hydrologic unit code) – The United States is divided and sub-divided into successively smaller hydrologic units which are classified into four levels: regions, sub-regions, accounting units, and cataloging units. The hydrologic units are arranged within each other, from the smallest (cataloging units) to the largest (regions). Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to eight digits based on the four levels of classification in the hydrologic unit system. (See <http://water.usgs.gov/GIS/huc.html>)

**Interbasin Transfer** – The withdrawal, diversion, or pumping of surface water from one river basin and discharge of all or any part of the water in a river basin different from the origin. (See N.C.G.S. § 143-215.22G and N.C.G.S. § 143-215.22L)

**River Basin** – A river basin is the portion of land drained by a river and its tributaries. It encompasses all of the land surface dissected and drained by many streams and creeks that flow downhill into one another, and eventually into the river. (DENR Office of Environmental Education, River Basins, <http://www.ee.enr.state.nc.us/public/eoaddress/riverbasinsmain.htm>. Also see [North Carolina General Statute § 143-215.22G](#) for a definition of the major river basins and sub-basins in North Carolina.)

**Tributary** – a stream channel that branches back toward its source.

(<http://www.terrapsych.com/ecology.html>)

**Wetland** - A wet land; a bog, fen, marsh, estuary. Wetlands are rich in nutrients, unique in ecosystems, and hospitable to many forms of life, including birds on long flyways. They also filter pollutants out of the water and ease the force of passing floods. (<http://www.terrapsych.com/ecology.html>)

The term "wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR § 328.3(b), Corps of Engineers Regulations).

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To request a hard copy or for an electronic interactive River Basin Map, for additional information, and for river basin posters, booklets, and inserts, go to <http://www.ee.enr.state.nc.us/public/eoaddress/riverbasinsmain.htm>

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**§ 143-215.22G. Definitions.**

In addition to the definitions set forth in G.S. 143-212 and G.S. 143-213, the following definitions apply to this Part.

- (1) "River basin" means any of the following river basins designated on the map entitled "Major River Basins and Sub-basins in North Carolina" and filed in the Office of the Secretary of State on 16 April 1991. The term "river basin" includes any portion of the river basin that extends into another state. Any area outside North Carolina that is not included in one of the river basins listed in this subdivision comprises a separate river basin.
- |    |     |                            |
|----|-----|----------------------------|
| a. | 1-1 | Broad River.               |
| b. | 2-1 | Haw River.                 |
| c. | 2-2 | Deep River.                |
| d. | 2-3 | Cape Fear River.           |
| e. | 2-4 | South River.               |
| f. | 2-5 | Northeast Cape Fear River. |
| g. | 2-6 | New River.                 |
| h. | 3-1 | Catawba River.             |
| i. | 3-2 | South Fork Catawba River.  |
| j. | 4-1 | Chowan River.              |
| k. | 4-2 | Meherrin River.            |
| l. | 5-1 | Nolichucky River.          |
| m. | 5-2 | French Broad River.        |
| n. | 5-3 | Pigeon River.              |
| o. | 6-1 | Hiwassee River.            |
| p. | 7-1 | Little Tennessee River.    |

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q.	7-2	Tuskasegee (Tuckasegee) River.
r.	8-1	Savannah River.
s.	9-1	Lumber River.
t.	9-2	Big Shoe Heel Creek.
u.	9-3	Waccamaw River.
v.	9-4	Shalotte River.
w.	10-1	Neuse River.
x.	10-2	Contentnea Creek.
y.	10-3	Trent River.
z.	11-1	New River.
aa.	12-1	Albemarle Sound.
bb.	13-1	Ocoee River.
cc.	14-1	Roanoke River.
dd.	15-1	Tar River.
ee.	15-2	Fishing Creek.
ff.	15-3	Pamlico River and Sound.
gg.	16-1	Watauga River.
hh.	17-1	White Oak River.
ii.	18-1	Yadkin (Yadkin-Pee Dee) River.
jj.	18-2	South Yadkin River.
kk.	18-3	Uwharrie River.
ll.	18-4	Rocky River.

This document was last altered March 20, 2009.