Is It a River or Not?
The Houston Ship Channel (HSC) Designation and Its Legal Implications

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TENACITY MARINE INC. v. ECOPETROL, S.A.

The main issue - Is the Port of Houston is a Riverport or a Seaport?

If a ship is tethered at a Seaport or Riverport, different clauses and tethering rates apply.

RIVERPORT(S) CLAUSE

IF VESSEL LOADS AND/OR DISCHARGES AT RIVERPORTS - INCLUDING, BUT NOT LIMITED TO RIVERPORTS IN CHINA, BUT EXCLUDING MISSISSIPPI RIVER AS COVERED BY THE MISSISSIPPI RIVER CLAUSE - TIME TO COUNT IN FULL 6 HRS AFTER TENDERING NOR AT OCEAN PILOT STATION INBOUND (UNLESS VESSEL ALL FAST EARLIER IN WHICH CASE TIME COUNTS FROM ALL FAST) UNTIL DROPPING/PASSING LAST OCEAN PILOT STATION OUTBOUND, I. E. NO DEDUCTION FOR TIME LOST DUE TO SHIFT FROM ANCHORAGE TO FIRST BERTH, TIME LOST DUE TO WEATHER AND/OR SEA CONDITIONS AND AWAITING TIDE.²

If HSC is a river, Port is a Riverport. If HSC is not a River, Port is a Seaport.
The Port of Houston is Connected to Galveston Bay by the Houston Ship Channel (HSC)
The original watercourse for the HSC, Buffalo Bayou, has its headwaters 30 miles (48 km) to the west of the city of Houston.

The channel has been used to move goods to the sea since at least 1836. Buffalo Bayou and Galveston Bay were dredged during the late 19th and early 20th centuries to accommodate larger ships.

The navigational head of the HSC, the most upstream point to which general cargo ships can travel, is at “Turning Basin” in east Houston.

The channel, periodically widened and deepened to accommodate ever-larger ships, is 530 feet (160 m) wide by 45 feet (14 m) deep by 50 miles (80 km) long.
So if you were going to hire an expert to determine if a watercourse was a river or not, you would hire a?:

• Cartographer/Geographer

• River Engineer

• Fluvial Geomorphologist

• Geologist

• Hydrologist

• General Civil engineer
So if you were going to hire an expert to determine if a watercourse was a river or not, you would hire a?: The other side chose:

- Cartographer/Geographer
- River Engineer
- Fluvial Geomorphologist
- **Geologist (BS, MS, PhD all in geology)**
- Hydrologist
- General Civil engineer
So if you were going to hire an expert to determine if a watercourse was a river or not, you would hire a?: The good guys hired me!

- Cartographer/Geographer
- **River Engineer**
- **Fluvial Geomorphologist**
- Geologist
- **Hydrologist**
- **General Civil engineer**
Arguments that HSC is a River

• Term “River” refers to a body of water flowing on the land surface within a defined channel or border and provides an outlet or drainage of water for a defined contributing land area. (HSC has defined banks and has a defined upstream drainage area drained by Buffalo Bayou)

• A river has a geographic origin at the most elevated, upstream portion of the contributing watershed. (HSC has an upstream drainage area)

• Most rivers discharge into a larger body of water. (HSC drains into Galveston Bay)

• Movement of water in a confined channel is a characteristic of a river. (HSC is a confined channel and moves water from Buffalo Bayou to Galveston Bay)
Arguments that HSC is a River

• Navigable rivers are often dredged in their lower reaches to remove deposited sediment, improve flow capacity, and facilitate navigation. (HSC is dredged to improve flow capacity and navigation)

• Over bank flooding can occur along a river segment when the inflowing water volume to the segment exceeds the flow capacity of the river within its banks. (HSC has overbank areas for overflows)

• In the northwestern Gulf of Mexico, “bayou” commonly refers to a body of water that occupies a nearly flat area and may include very slow moving rivers. Bayous can be a river, stream, creek, or tidal channel. (HSC occupies what used to be called Buffalo Bayou)

• HSC maintains the features of a stream about 15 miles downstream of the beginning of the HSC.

• Rain driven water comes down from upstream of the HSC and flows through HSC, eventually to Galveston Bay.
Arguments that HSC is a River

• Overall important points that indicate HSC is a river:

  – It has an origin of a slow moving, meandering, slow gradient stream

  – It functions as the principal drainage of a watershed area of approximately 103 square miles

  – There is downstream flow of surface water contributed by drainage into Buffalo Bayou and its tributaries

  – Frequent flooding when volume exceeds its banks during periods of high rain

  – Eventually discharges into the San Jacinto River Valley about 15 miles downstream of the start of the HSC and further into Galveston Bay.
Arguments that HSC is not a River

Technical arguments

• Buffalo Bayou becomes the HSC starting at the Turning Basin and travels generally southeast for 52 miles to the San Jacinto River.

• The first 40 miles going upstream, the deep channel of the HSC is approximately 45 feet deep and 530 feet wide.

• From there to the Turning Basin, HSC deep channel depth varies from 36 to 40 feet with a width of approximately 430 feet.

• The width of the entire channel (also the width of the navigable channel) along the first 40 miles of the HSC is 1,000 feet.
Arguments that HSC is not a River

Technical arguments

- Bankfull discharges of rivers in the area are between 1.5 to 5 year flood events and overbank areas are not inundated until the flow capacity of the channel is exceeded.

Floodplain and Stream Features
(Courtesy of George Athanasakes, Stantec)
Arguments that HSC is not a River

**Technical arguments**

- The HSC does not have the traditional features of a river in the general area.
- The “main channel” can contain up to the 100 year discharge.
- The “overbank areas” are always inundated.
The Buffalo Bayou has a drainage area of about 465 square miles (1,204 km²).

The dark blue line in the following figure is representative of the Atlantic Plains, of which Texas is a part, and shows that for a drainage area of 1,204 km², the average bankfull depth of a natural river should be about 2.3 m (7.5 ft)

This is 6 times less than the depth of the HSC, which is 45 feet (14 meters).
Arguments that HSC is not a River
Technical arguments
Arguments that HSC is not a River

Technical arguments

• The relation of drainage area to river bankfull width is shown in the next slide.

• For a drainage area of 1,204 km², the average river width at bankfull should be about 30 m (98 ft) (dark blue line).

• This is 5 times less than the HSC deep channel width of 530 feet (162 m). Since the whole 1,000 foot (305 m) width of the HSC (deep channel and side areas for barge traffic) is always inundated, it could be considered the channel.

• Then the HSC is 10 times more than the average natural bankfull channel width.
Arguments that HSC is **not** a River

Technical arguments
Arguments that HSC is not a River
Technical arguments: A Canal or Bayou?

• The Merriam-Webster dictionary: a *canal* is “a long narrow place that is filled with water and was created by people so that boats could pass through it or to supply fields, crops, etc., with water.” This is the description of the HSC and a canal is not a river.

• National Geographic: “A bayou is a slow-moving creek or a swampy section of a river or a lake. They are usually found in flat areas where water collects in pools. Bayous are often associated with the southeastern part of the United States. Bayous are usually *shallow* and sometimes *heavily wooded*. They can be freshwater, saltwater, or a combination of both.”

• A bayou is a sub-category of a river and the description does not apply to the HSC – so HSC is not a river.
Arguments that HSC is **not** a River

Technical arguments

- The HSC occupies the entire watercourse, so there is no hydraulically connected overbank areas beyond the HSC. A river traditional has such areas
Arguments that HSC is not a River
Technical arguments

• The HSC occupies the entire watercourse and is essentially the 100 year floodplain (dark blue). Light blue is the 500 year floodplain.
Arguments that HSC is not a River
Non technical arguments

• The Harris County Flood Control District (HCFCD) website: “Just east of downtown Houston near the Turning Basin, Buffalo Bayou becomes (underlined for emphasis) the Houston Ship Channel.”

• HCFCD considers Buffalo Bayou’s watershed area to end just upstream of the HSC and cites a drainage area of 102 square miles.
Arguments that HSC is not a River
Non technical arguments

• U.S. Customs and Border Protection (CBP) characterizes the Houston Port as a “Seaport.” The Houston Port is designated as a Port of Entry and CBP maintains an office in Houston which is designated as the “Houston Seaport Office.”

• U.S. Department of Transportation describes the Port of Houston as a Seaport saying “And the seaport of Houston jumped from 11th to 4th place...” and “Among the leading seaports in 2008, for example, Houston,...”

• Port of Houston is considered a Seaport by several non-government entities.
  – https://www.searates.com/port/houston_us.htm
The purpose of the HSC, as a canal, is to service the Port of Houston. Since the Port is considered a Seaport (not a river port) and a Port of Entry by the U.S. government and other entities, the HSC cannot be a river. If the HSC was considered a river, the Port of Houston would not be designated as a Seaport.

Based upon my education, over 40 years of experience in rivers and estuaries, and examination of the cited information, it is my conclusion, to a reasonable degree of engineering and scientific certainty, that the original Buffalo Bayou from the Houston Ship Channel (HSC) Turning Basin to Galveston Bay is not a river but is a canal.
Obviously the decision was that the HSC was not a River because of the following:

- If I had lost, would I be presenting this?
- As a river engineer, I would have been embarrassed if I lost to a geologist on a river issue.
- I had nicer graphs and figures – the other guy just showed geology maps.

IN THE MATTER OF THE ARBITRATION
- between -
TENACITY MARINE INC., as Owner,
Claimant,
- and -
ECOPETROL, S.A., as Charterer,
Respondent,

Under a February 19, 2015 charter party on the ExxonMobil VOY2005 form for the charter of the M/T TENACITY
In further support of its position, Charterer offers the declaration of Dr. David T. Williams, who holds a Ph.D. in river mechanics and certifications in both floodplain management and hydrology. Dr. Williams discusses in detail why the HSC can no longer be considered a river by the governing standards found in those disciplines and concludes the HSC fails to meet any of the key criteria of a river.\textsuperscript{31}

Buffalo Bayou still exists as a river above the turning basin and may also exist within parts of the HSC itself, but the man-made HSC is now something substantially beyond what was once a river.
The early efforts at creating the HSC were certainly intent on enhancing the natural attributes of the Buffalo Bayou as the HSC follows that early water way’s snake-like path inland. Some features of a river continue to be present in the HSC and in many respects the HSC functions as a river. It is also true many rivers are dredged and have had other improvements made to them without erasing their historical and commercial standing as a river.

But, it is equally apparent that the HSC has long ago eclipsed the Buffalo Bayou. Ecopetrol’s expert Dr. Williams offers insight into that issue, as does the other evidence offered by the Charterer. That evidence is sufficient support for the conclusion reached by the panel that the HSC is not a river for purposes of the Riversport(s) Clause in the subject charter.
Questions?