

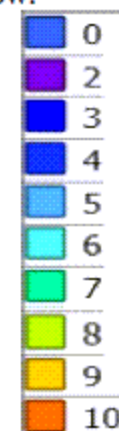
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In recent years at the Little River Cleanup we have given out maps like this and I have talked. This year I will write instead of talking. This is based on my study and others may have different opinions--references at the end so you can follow up on your own. -- Hugh Gladwin

ELEVATION -- larger map

Everything in South Florida having to do with floods, hurricanes, and sea level rise is first and foremost affected by elevation. Use the streets shown to find locations of your house (if you live here) and other places on the large map centered on the Little River with El Portal above it and the City of Miami below. Elevation in feet is indicated by colors shown by this scale. Also, the white numbers on the map show the approximate elevation in feet at the center of the number.

If you live near a body of water like Biscayne Bay or the Little River/C7 Canal and your home is less than 5 ft elevation you may be at risk from storm surge or flooding in a major hurricane. If your home is 3 feet elevation or less anywhere in South Florida you are at risk for flooding and you are probably in a hurricane evacuation zone.



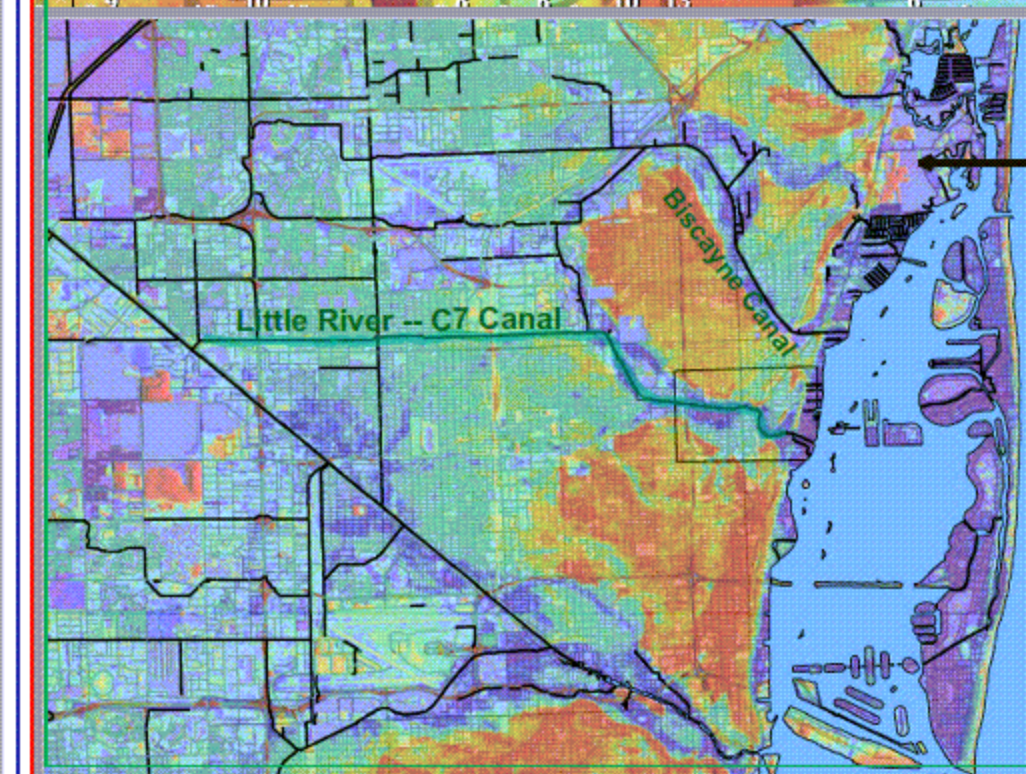
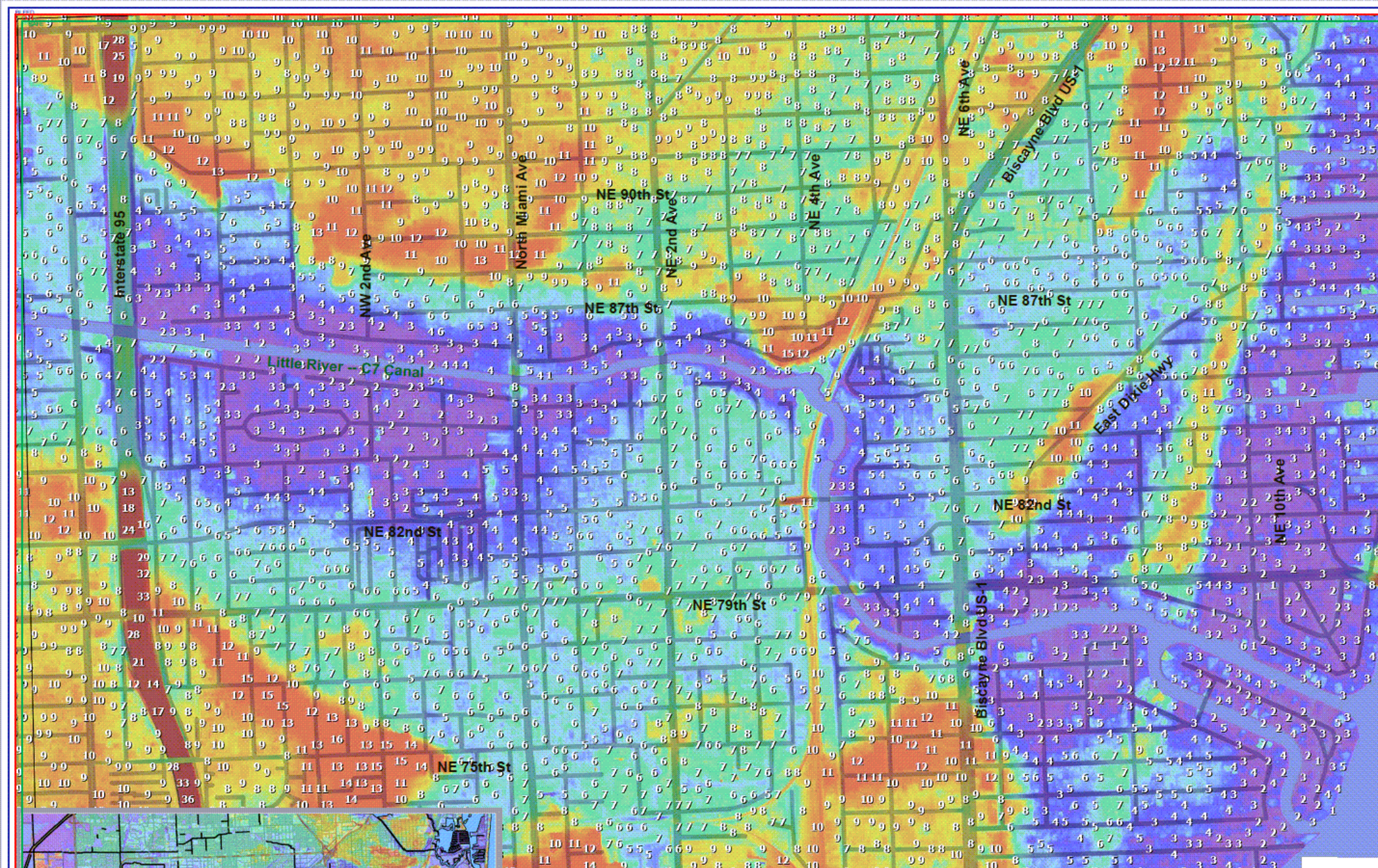
You need to follow the orders for those zones and you also need to evaluate the flood risk to your own home when you decide what to do in a hurricane or major flood event. This works two ways: if your home is at a very low elevation you may be at risk for flooding even if an evacuation order has not been given for where you live. On the other hand in a major hurricane, if your home is on higher ground above 6 feet, is built to code, and has window protection, you are usually safe staying in your home prepared to be on your own for a week or so.

LOW ELEVATION AREAS ON MAPS -- BLUE-PURPLE 4 FT ELEVATION OR LESS

On the large map there is a low-lying area on the right side adjacent to Biscayne Bay, most of it in the Upper East Side, Shorecrest, Miami Shores, and North Miami. Ideas about how these areas came to be so low-lying after 1928 are given on the other side of this handout. In this area places at 2 feet or less elevation are now being flooded during King Tide events.

On the left side of the large map there is a low-lying area in El Portal along the Little River and south of the Little River mostly in Larchmont Gardens area (unincorporated Miami-Dade County). This area will flood when the Little River/C7 Canal goes above 3 feet higher than normal (which it will with heavy rainfall flooding or hurricane storm surge). The County has installed large pumps to drain the Larchmont area. The El Portal side flooded from Hurricane Irma storm surge (most of it was not under evacuation order). It has also flooded in some high rainfall events when water level in the river rose.

This low-lying area will be greatly affected by measures that will need to be taken to deal with increased flooding upstream as sea level rise (SLR) reduces the drainage efficiency of the canal system.



SMALLER MAP OF NORTH MIAMI-DADE COUNTY -- Decisions to be made as sea level rise (SLR) reduces the drainage efficiency of the canal system.

The Little River/C7 canal and canals flowing into it drain a large area of northern Miami-Dade County. Over this distance, the canal drops less than 5 feet elevation from western Dade down to Biscayne Bay. This is not much gravity drop to allow rainfall floodwaters to flow efficiently. Each foot of sea level rise further reduces that water flow. The estimate of sea level rise by the Climate Change Compact of the 4 SE Florida counties of around 2 feet of sea level rise by 2060 still seems a realistic estimate. This loss of half of the canals gravity drop means measures have to be taken now to move water through them faster. These will all involve allowing water levels in the Little River/C7 canal to go higher in flood events. Since we live on a porous limestone aquifer, higher flood levels in the canal means flooding in adjacent neighborhoods even with higher sea walls along the canals.

Note on the smaller map that the Little River end of this canal system is the drain point of the entire upstream area (also the Biscayne canal to a lesser extent). It will be greatly affected by the kind of measures taken to increase flood flow through the system.

In this planning there are many tradeoffs between engineering costs and quality of life for people and the natural environment along the canals and river. Quality of life is preserved better by letting rain flood waters drain more slowly from the upstream area. This would mean measures like more surface water storage area there and redoing large parking lots to let water go down through them to the aquifer rather than run off to the canals.

More people in north Dade will be affected by SLR in this way than are in low-lying areas next to Biscayne Bay. They comprise a large portion of the County's main workforce and many are very economically vulnerable. They and we at the drain end are connected in the need to have good decisions made.

1924 Aerial Photo

* Some key references. For more and complete references and updates go to <https://c7riocho.net/lr2020/>

C.W. McVoy, W.P. Said, J. Obeyesekere, J. Van Arman, T. Dreschel
Landscapes and Hydrology of the Predrainage Everglades

Robert S. Carr *Digging Miami*
Thelma Peters *Biscayne Country, 1870-1926*

N.D.B. Connolly *A World More Concrete*

and many resources, maps, and photos from the FIU GIS Center
<http://maps.fiu.edu/gis/>



1928 Aerial Photo

In 1924 the high water level inland in the Everglades and transverse glades kept water very active. The Little River starting from the transverse glade near what is now NE 2nd Ave dropped 6 feet to Biscayne Bay in rapids, though canoes could make it up to the Glades. Since the Miami River had impassable waterfalls, going north up Biscayne Bay this was the first through waterway. Then as now everything underground is porous limestone but with higher inland water levels the aquifer top was higher pushing out through many springs in this area.



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Two aerial photographs done in 1924 and 1928 show how Everglades drainage and housing development came to the Little River area.

The large 1924 aerial photograph covers the same area as the large elevation map on the other side of this handout. These were black-and-white photos but they have been colored with the same shading showing elevation like the map on the other side. This does not mean that these elevations were the same in 1924 and 1928. In particular, there is reason to think that the low-lying areas on the left (west) side of the maps was not so low-lying in 1924. See below for a possible explanation.

If you go back and forth between the two large maps you should be able to figure out where homes and other places now would have been located in 1924.

The years between the two photographs, 1924 to 1928, brought great changes to this area. Everglades drainage came as the C7 canal was dredged and built up to where the Little River began near what is now NE 2nd Ave. You can see the change by comparing the maps. Streets were laid out in the Miami Shores and El Portal developments and some houses were built. By 1928 streets had also been laid out in the Sherwood Forest development which did not exist in 1924. The 1926 Miami hurricane halted development along Biscayne Bay although the canal dredging to create Belle Meade Island was done. In 1928 the Great Depression was to come the next year bankrupting the El Portal and Sherwood Forest developments.

In 1924 the Everglades extended almost to what is now NE 2nd Avenue in what is called a transverse glade through a lower level of limestone rock on the coastal ridge. The coastal ridge served as a dam to keep fresh water levels in the Everglades at an average of six feet above sea level. At the east end of the transverse glade the Little River began with Everglades water flowing rapidly through the six-foot drop to Biscayne Bay.

The low-lying area shown on the left (west) side of the large maps is where this transverse glade was located in 1924. In the rainy season the surface water level would have been about 6 feet above sea level and perhaps a couple of feet lower in the dry season. However the elevation of the ground under the water would probably have been higher than the current 2 to 4 feet elevation in the area.* Like much of the Everglades a thick layer of peat from decayed plant material covered the bottom. There was great hope for agriculture given this fertile ground but almost all of it dried up and blew away leaving the lower elevations we have now. Housing moved in instead slowly through the depression and WW II years in this area and in most of western Dade County now habitable after Everglades drainage. In 1950 rigid racial segregation in Dade was still in effect but this new land escaped that and a diverse middle class population including many African-Americans came to the west side of El Portal and adjacent areas.