

Oil Spill Sampling by Sarasota County

John Ryan, Kathryn Meaux & Jon Perry; Sarasota County Water Resources; October 28, 2010

The Deepwater Horizon oil drilling platform exploded on April 20 in Louisiana almost 350 miles from Sarasota. The largest oil spill in US history was ended after 3 months when the well was capped on July 15, but 185 million gallons of oil had been spilled. About a third was captured, one quarter was evaporated, 16% was dispersed, and the remaining quarter is underwater, washed ashore or is entrained in sediments. The oil is reportedly degrading quickly. In Florida, only the westernmost, panhandle beaches near Pensacola had any documented oil from this spill. The oil rig was drilling the deepest oil well in history and was operating in 4,000 feet of water. Water that deep is far from Sarasota County, about 150 miles west. Mixing of deep and shallow water is uncommon and circulation models predict that oil will not come here.

In our area, various agencies conducted sampling. In addition to the large interagency effort, Sarasota County Water Quality Planning took samples from water and sediment on the beaches and oyster tissue near the mouths of creeks. The purpose of the project was to characterize the background levels of contaminants. It was expected that some petroleum would be found because of normal usage by boats (22,000 registered) and cars (400,000 registered) in the County. The laboratory methods are acutely sensitive and can detect “parts per billion” (ppb) levels. A part per billion would be one drop of oil in an area of sand about 100 feet long by 10 feet wide by one foot deep.

Samples were analyzed for polycyclic aromatic hydrocarbons (PAHs), a group of 18 pollutants found in crude oil that are known to have human health and environmental effects. The entire length of the County beaches was sampled (26 locations) on July 22 for both water and sediment. All 16 creeks had oyster tissue sampling completed by September 15. Oysters were chosen because they eat by filtering particles from the water and incidentally accumulate contaminants in their tissues, so are a good indicator species.

As expected the beach samples were found to be very clean with 25 of 26 locations at undetectable levels. One sediment sample near Venice had barely detectable concentrations. These levels are well below the standards for impacts to human health^{1,2} and aquatic life³. These results are consistent with interagency sample results⁴ that showed our region had a small number of samples with low but detectable levels of PAHs, including two sites in Sarasota County.

The oyster samples exhibited low levels of PAHs probably from petroleum in runoff or from boating. Among those samples that were above the detection limit the concentrations ranged from 0.14 to 42 ppb. Samples were generally higher in more urbanized areas as shown in Figure 7. The levels were comparable to what was found in a 1992 study of Sarasota Bay⁵ that reported samples results between 15 and 50 ppb. Florida oyster samples from the NOAA Mussel Watch program⁶ from 1989-2001 are higher than the local samples with a median of 6.3 compared to the local median of 1.3 ppb.

This comprehensive, local sampling initiative was accomplished to protect the citizens and resources of the County. If BP oil had come here, this strong set of background data would

have been compared to data from oil-impacted areas to make a compelling case for BP's responsibility. In the absence of oil spill impacts, the data shows us that our community is remarkably free of these common pollutants and reminds us to continue with our successful environmental protection and enhancement programs. Persons who think they see petroleum or other contamination in the environment are strongly encouraged to report it to the State Warning Point at 800-320-0519.

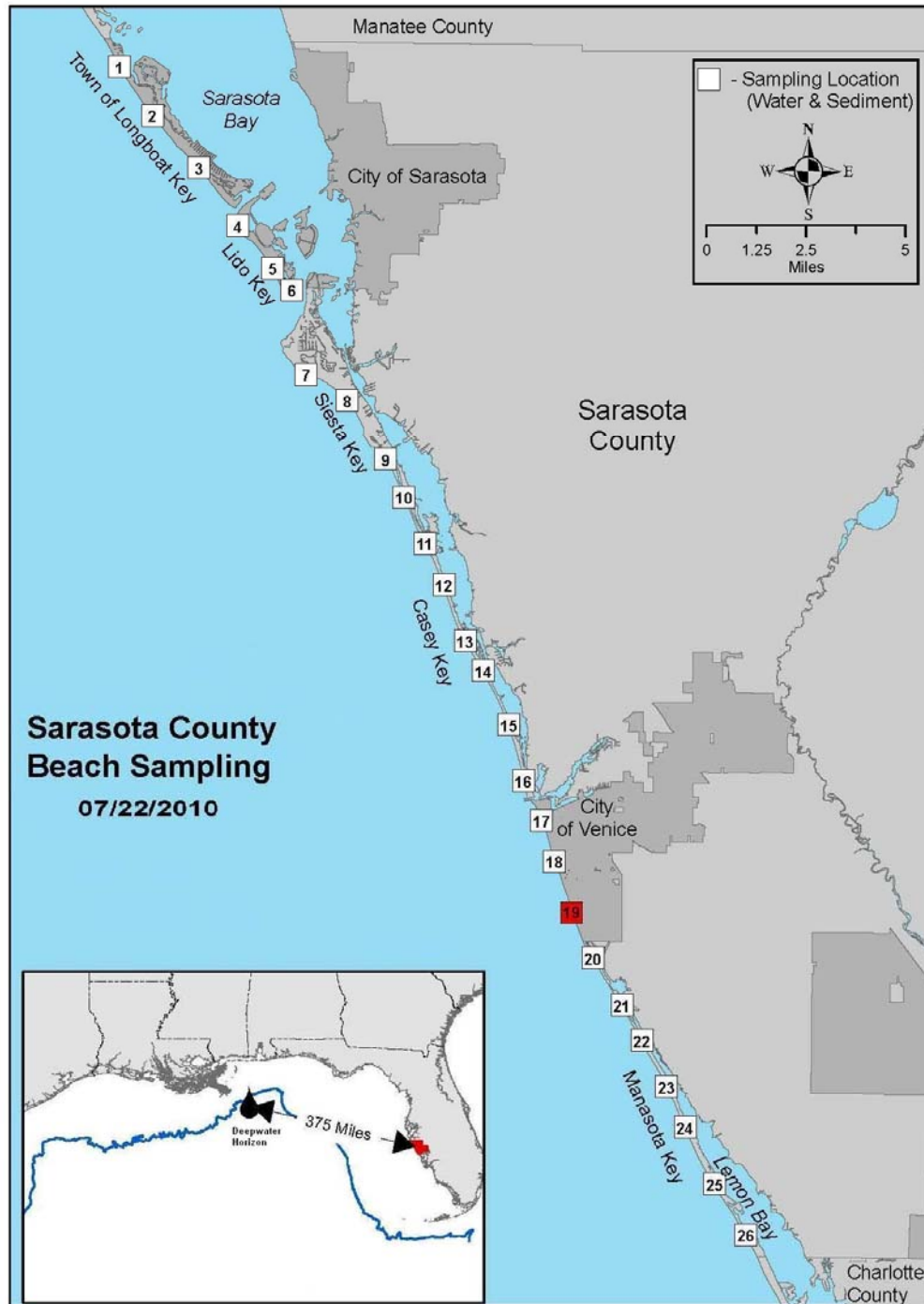


Figure 1: Beach Sample Locations by Sarasota County Water Quality Planning.



Figure 2: Scientist collecting sediment samples from the beach intertidal zone on July 22, 2010.

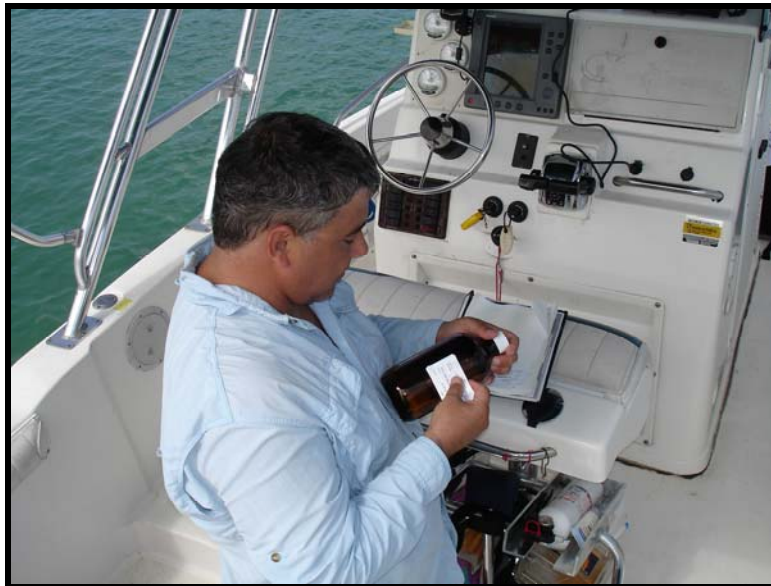


Figure 3: A County scientist preparing to sample the water quality of the Gulf of Mexico.

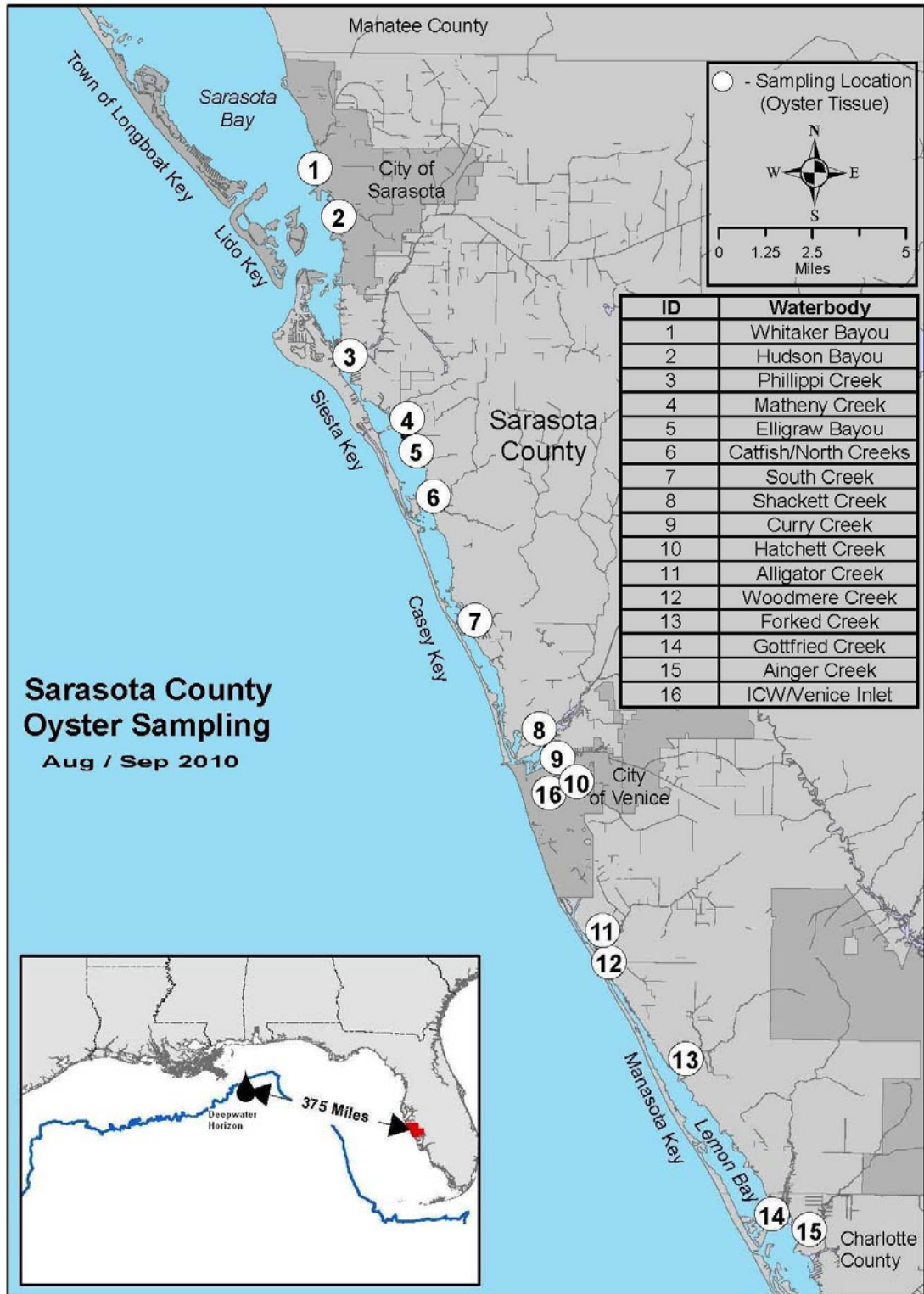


Figure 4: Oyster sample locations in the County's creeks.



Figure 5: A healthy oyster reef in Phillippi Creek.



Figure 6: County scientists sampling oysters.

Table 1: Background Oil Sample Results for Sarasota County – Compared to Standards (ppb)

	Results for 26 sites	Results for 25 sites	Site 19		Standard	Standard	Standard	Results	Results
PAH	Beach Water	Beach Sand	Beach Sand	Limit of Lab Method	Human Health – Beach Sand - DOH ¹	Aquatic Life (Chronic) Sediment EPA ³	Residential Soil Cleanup Target Level – DEP ²	DEP Sample 6 – South Lido ⁴	DEP Sample 5 - Dona Bay ⁴
Acenaphthene	None detected	None detected	4.3	4.1	3,400,000	491,000	2,400,000	NA	NA
Acenaphthylene	None detected	None detected	None detected	4.9	No standard	452,000	1,800,000	NA	NA
Anthracene	None detected	None detected	5.2	2.5	17,000,000	594,000	21,000,000	NA	NA
Benzo(a)anthracene	None detected	None detected	9.2	3.7	150	841,000	No standard	NA	12
Benzo(a)pyrene	None detected	None detected	5.2	4.5	15	965,000	100	NA	21
Benzo(b)fluoranthene	None detected	None detected	5.6	2.9	150	979,000	No standard	NA	38
Benzo(g,h,i)perylene	None detected	None detected	4.3	3.8	No standard	1,090,000	2,500,000	NA	25
Benzo(k)fluoranthene	None detected	None detected	None detected	6.1	1,500	981,000	No standard	NA	NA
Chrysene	None detected	None detected	5.9	3.7	15,000	844,000	No standard	NA	20
Dibenz(a,h)anthracene	None detected	None detected	None detected	4.4	15	1,120,000	No standard	NA	NA
Fluoranthene	None detected	None detected	5.7	4.6	2,300,000	707,000	3,200,000	NA	26
Fluorene	None detected	None detected	5.0	3.1	2,300,000	538,000	2,600,000	NA	NA
Indeno(1,2,3-cd)pyrene	None detected	None detected	4.8	4.4	150	1,110,000	No standard	NA	21
1-Methylnaphthalene	None detected	None detected	None detected	5.2	22,000	No standard	200,000	NA	NA
2-Methylnaphthalene	None detected	None detected	None detected	5.7	310,000	No standard	210,000	NA	NA
Naphthalene	None detected	None detected	None detected	4.4	3,600	385,000	55,000	NA	NA
Phenanthrene	None detected	None detected	6.8	3.9	17,000,000	596,000	2,200,000	NA	NA
Pyrene	None detected	None detected	5.5	5.0	1,700,000	697,000	2,400,000	NA	21
2,6-Dimethylnaphthalene	NA	NA	NA	NA	No standard	No standard	No standard	9.9	22

Median PAHs In Sarasota County Oysters 2010

Median for NOAA Mussel Watch Samples in Florida is 15.8

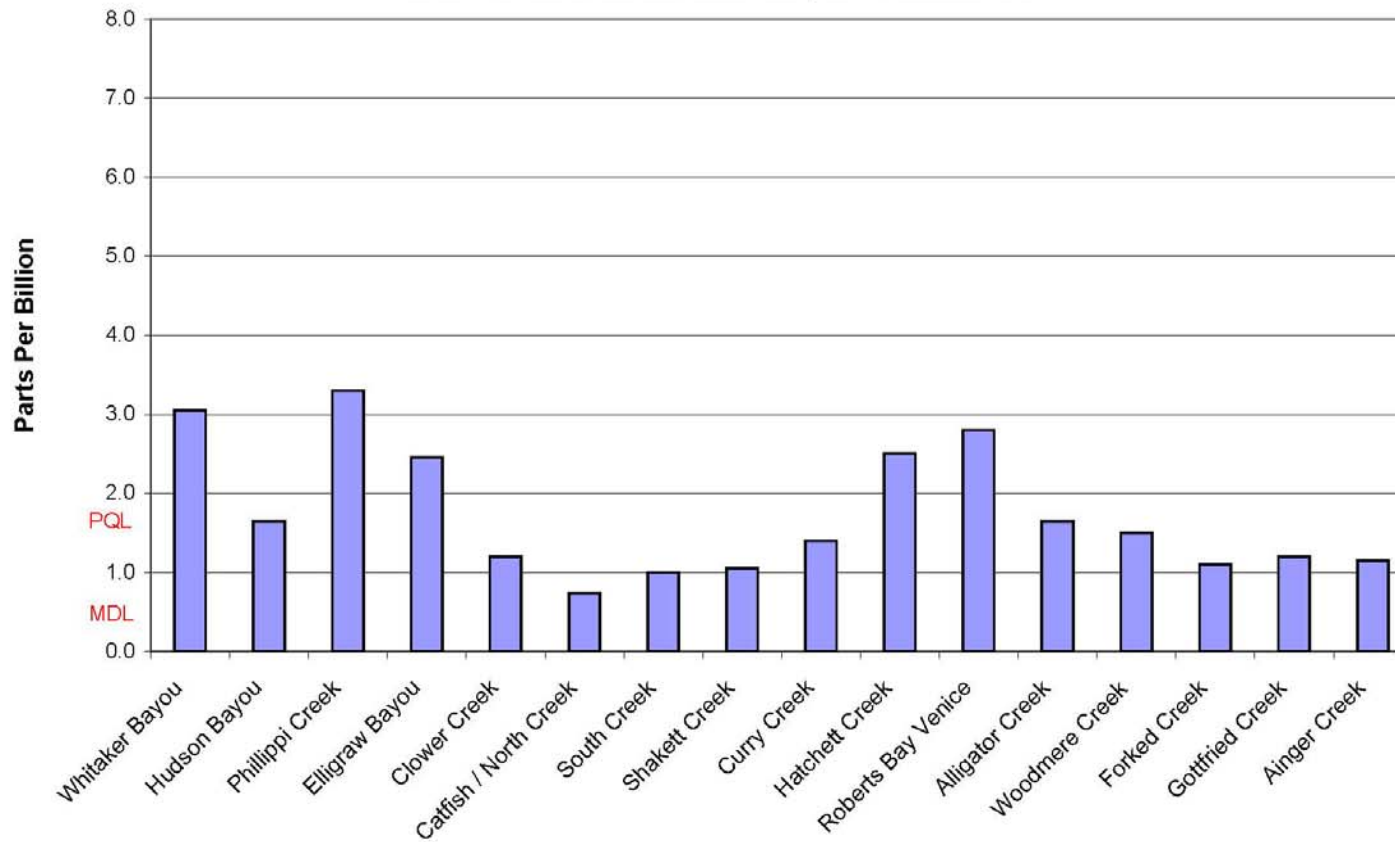


Figure 7: Oyster Tissue Results

Acknowledgements

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References

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