

Approaches to Environmental Restoration of a Polluted Harbor Having Submerged Ancient Alexandria's Royal Buildings and Artifacts

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In 1996, it has been discovered presence many of invaluable underwater archaeology in the Eastern Harbor of Alexandria, Egypt. These include: (1) the ancient shoreline, the reefs, the island of Antirhodos, the promontories which project from the ancient shore into the sea and the artificial dikes constructed by the Ptolemy's and Marcus Antonio's, (2) traces of ancient buildings on the peninsula of the Timonium and Antirhodos islands, (3) more than 1000 different artifacts such as: heavy weights in tons of columns, basins, sphinxes, statues, parts of obelisks with hieroglyphs and ceramics, and (4) wooden frames and outer planking of a Roman wreck were noticed protruding from the sediment at the bottom of the harbor near the Antirhodos island. Some artifacts were found associated to the wreck, the most important are: two gold rings (one with intaglio), glass and coins.

These discoveries need to be protected from looting, destruction and impacts of Man's activities (pollution). There is a belief that the best way to protect these invaluable heritages at these sites is to transfer them to underwater park or museum. This is as a project of cultural, tourist and economic benefices. Obviously the execution of such project essentially depends upon how, and rate of, the water quality of the harbor polluted mainly by discharge of wastewater effluents since 1970s is restored. As such park needs at least overlying waters with high degree of transparency.

The Governor of Alexandria lately has taken decisions related to environmental mitigation as approaches to restoration of this important coastal area of the Mediterranean Sea. These decisions are: (1) Stopping the municipal wastewater discharge completely at two sites lying at the outer sides of the harbor, called Qait-Bey and Silsilah marine outfalls. The discharge is gradually reduced and the stopping will be in effect from this summer. (2) Stopping the direct discharge of wastewater effluents during the storm events into the harbor through eleven minor-submerged outfalls distributed along the marginal coast of this semi-enclosed harbor (with two openings on the sea). Since 1993, the discharge rate from these minor outfalls is drastically reduced than was before (80,000 m³/day).

The present work, therefore, is a follow up for the studied water quality values of the harbor since last decade till present to see how the harbor really is getting improvement by time particularly after the year 1993. The water quality of a faraway offshore deep-sea area is also studied as a reference for comparison. It is worthy mentioning that this harbor is used as a harbor mainly for fishing ships and as a fish dock also it holds near its northwest opening near the fame Qait-Bey Fort, remnants of the old Alexandria (Pharos) lighthouse, one of the Seven Wonders of the World.