Pensacola I-10 Bridge Reconstruction Environmental Assessment

Ecological Monitoring

Start / End Dates: 2005

Key Project Personnel Involved in this Project:

S. McGlynn, PhD
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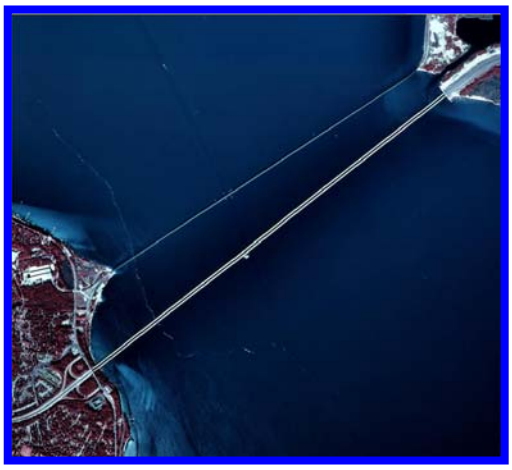
Project 6

Brief Description of Work Performed:

Hurricane Ivan devastated Pensacola in August 2005 and damaged the I-10 Bridge over Escambia Bay to such an extent that it must be rebuilt. This study determined the extent of marine habitat disruption, mostly seagrass beds, and evaluated potential toxins that might be resuspended re-suspended by the I-10 Bridge reconstruction. This study had national security implications since the I-10 corridor connects vital military bases and municipalities. McGlynn Labs expedited this project. The sediments of Escambia Bay, at the site of the I-10 Bridge replacement, were sampled at 15 sites by McGlynn Labs from our 17 ft Boston Whaler with a stainless steel gravity corer. Sampling sites were spaced at regular intervals, encompassing the span of the new bridge. Sites were identified by GPS. Samples were cored to a depth of 30 cm with a stainless steel corer. The core was homogenized and a representative sub-sample was placed in analyte free containers. Samples were preserved according to NELAC protocol and NELAC holding times were followed. Sediment samples were analyzed at for Volatile Organics (EPA 8260B), Semivolatile Organics (EPA 8270C), Total Recoverable Petroleum Hydrocarbons (FLO-PRO) and metals (Ag, As, Al, Ba, Cd, Cr, Pb and Se by EPA 6010B and Hg by EPA 7471A). 2190 separate and distinct sediment contaminants were assayed.



Results were first evaluated using the *Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F.A.C., Table II, Soil Cleanup Target Levels, 2005 edition*. Sediment Arsenic concentrations found exceeded the SCTL. The sediment contaminants were then evaluated using the *Approach to the Assessment of Sediment Quality in Florida Coastal Waters, McDonald, 1994*. All contaminants, including Arsenic, were below the Probable Effects Level (PEL). *A Guide to the Interpretation of Metal Concentrations in Estuarine Sediments, Schropp and Windom, 1988*, revealed that when Arsenic concentrations are normalized to Aluminum concentrations, the Arsenic concentrations are natural, not elevated. The results of this analysis reveal that none of the contaminants assayed pose a real or potential threat to the biota of Escambia Bay based on existing studies and state/federal guidelines.

Seagrasses were surveyed by aerial photography. McGlynn Labs SCUBA divers investigated all the 15 sites. The entire span of the bridge was sampled by FROTUS. No seagrasses were found; the loose unconsolidated sediments are inhospitable to vegetative colonization. The bridge reconstruction represents little threat to the ecosystem.

Bay Point Marriott, Panama City, Florida

Ecological Monitoring

Start / End Dates: 2005

Key Project Personnel Involved in this Project:

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Project 9

Brief Description of Work Performed:

The Bay Point Marriott expanded its FDEP permit, which requires a healthy aquatic system. To determine the ecological and hydrographic status of the system, Garlick Environmental Associates hired McGlynn Labs.

This assessment required field sampling, ecological monitoring and hydrological modeling all according to FDEP protocol. Hydrological models were used to estimate the time needed to reduce an initial concentration of hypothetical pollutant to 10% of its initial concentration. The model was field verified to determine the flushing and the advective/dispersive nature of the waterway using a tracer dye, Rhodamine, measured in the field with a Hydrolab Minisonde equipped with fluorescence sensors. Flow measurements were performed with both drogues and a Marsh McBurney 201D portable current flow meter, according to FDEP protocols (DEP-SOP-001/02, FT 1800, Field Measurement of Water Flow and Velocity).

McGlynn Labs provided a detailed and specific description of: the system; changes in dimension; the longest path to open water; the mean tidal range, amplitude and periodity; flow amplitude at mid tide for ebb and flood at selected locations within the basin and the location of the entrances to the basin; the phase lag in the tide between the entrance and the center of the system and to the head of the system.

Laboratory Services included triplicate sampling and analysis according to Chapter 62-312, of the Florida Administrative Code. Sampling included: Fecal and Total Coliforms (10 samples over a 30 day period); Oil and Grease; Arsenic; Cadmium; Chromium; Copper; Lead and Zinc. Diel oxygen was measured at 4 hour intervals at all three stations for a 24 hour period. The final report detailing: dates; sampling methods; Chain of Custody; accuracy; precision; NELAC certified; MDL; PQL; water temperature; salinity; depth; weather; tidal stage; the appropriate Rule 62-302, F.A.C., standard for the parameter being measured; and QA/QC data available on request. McGlynn Labs performs many similar studies throughout Florida.