

# Superfund Site Long-Term Biota Monitoring

WETLAND IMPACT ASSESSMENT PROJECT

Site Location: Southern New Jersey  
Client: Confidential Client  
Date: 2008 – ongoing

O'Reilly, Talbot & Okun (OTO) is conducting long-term biota monitoring at a Superfund site in southern New Jersey under contract to TRC Environmental Corporation. As part of this effort, OTO is assessing the effects of shifts in the water table on forested wetland vegetation. Contaminants include metals, chlorinated hydrocarbons, and volatile organic compounds (VOCs).



OTO conducted monitoring within four “impact” sites and a single reference site. At each study site, a 30 m long string line benchmark was established between two permanent points and string line levels confirmed with a pocket level. All seedlings were tallied within contiguous 25 cm x 50 cm quadrats oriented perpendicular to the string line for a total of 120 plots per site. Light level data was collected within each quadrat. Reference elevation measurements were collected relative to the water table at each end of the string line by excavating a small test pit and measuring water table depth from the string line. Forest floor measurements were taken along a metric tape at 25 cm increments. All elevation data were first tested for normality. Given marked departures from normality, differences across sites were evaluated with a non-parametric Mann–Whitney *U* test. A G-test of correspondence with Williams’ correction factor and a coefficient of dispersion (CD) was calculated using pooled seedling data across the five sites. STATISTICA was used to conduct all analyses.

Tree and shrub seedlings do not seem to be restricted to any one forest floor elevation class, but occur over a subset of total forest floor elevation classes. Specifically, although there were subtle differences, tree and shrub species appear to favor the intermediate hummock elevations (20–30 and 30–40 cm) while avoiding the highest and lowest elevations. Given the results of this baseline study, it appears that red maple seedlings are likely to be the most tolerant of saturated conditions, whereas Atlantic white cedar and sweet pepperbush seedlings are going to be intolerant. Given the range of forest floor elevations, barring significant changes in the elevation of the groundwater table resulting from the operation of the pump and treat system ( $\pm 30$  cm), woody tree and shrub species will continue to have access to suitable microsites within their preferred elevation ranges.