



We are continuing to develop AQUATOX and have a new beta executable available on the WarrenPinnacle.com website. This version is different from EPA Release 3 in the following ways:

Builds 47-50 (7-31-2012)

- Updated open-source repository and link to repository (in "Help" "About" screen).
- Removed zooplankton from the calculation of total nitrogen and total phosphorus to more closely correspond to monitoring data
- Floating plants refinements
 - Added floating option for plants other than cyanobacteria (formerly known as "blue-green algae")
 - Converted the averaging depth for floating plants to the top 3 meters to more closely correspond to monitoring data
 - Floating plants now explicitly move from the hypolimnion to the epilimnion when a system is stratified
- Fixed problem with reaeration when oxygen exceeds twice saturation.
- Added an option for fish to be designated as anadromous, which spend significant portions of their lives out of freshwater....
 - Added Anadromous Fish window to help file and updated the interface
- Modifications to PFA (perfluoroalkylated surfactants) model to increase flexibility:
 - Uptake rates (K1s) and elimination rates (K2s) are visible and editable for animals and plants
 - New interface to estimate animal K1s and K2s as a function of chain length
 - Improved gill-uptake equation for invertebrates
- Improved sensitivity analysis
 - Enabled nominal-range sensitivity analysis for linked-segment applications
 - Major redesign of uncertainty setup for linked systems with a drop-down box that enables changing from one segment to the next.
- Interface and Data Input Improvements
 - Scrollable Libraries
 - Percent exceedance and duration analysis graph in the output capabilities that allow a repeating time period
 - "Sand/Silt/Clay" options added to Sediment Menu
 - New "food web" big button on main screen.
 - Enabled the Graph Setup option for linked segments applications. Required new data structure for graph setup management. Added "suppress series" option.
 - Setup window resize fix.
 - "BOD" to "CBOD" in interface.
 - Name change to "Biogenic Silica" from bioavailable silica.
 - Added option for specifying a fixed time step, rather than allowing the Runge-Kutta numerical solver to vary the time step. (A fixed time step is a common feature of many environmental models.)
 - For external toxicity calculations, removed requirement for non-zero LC50 to apply EC50_Growth.
 - In multi-segment model, diagenesis parameters are now segment specific
 - Improved notes interface with unlimited characters for notes taking
 - Uptake rate of organic chemicals to detritus (K1 detritus) is now editable.
 - Capability to spin up nutrients and organic matter as well as biota.

- New outputs: "P Diagenesis Flux (cumulative) in kg, Pct. Gastropods, Pct. Bivalves, Pct. Oligochaete, Pct. Diatoms Peri, Pct. Cyanobacteria Peri., Pct. Greens Peri., Pct. Cyanobacteria Phyto., Pct. Diatoms Phyto., Pct. Greens Phyto., Pct. Other Phyto., Boundary Condition Gains or Losses of Nutrients (when run in linked mode)"
- Added new metrics for "eunotia," and individual EPT components.
- Fraction lipids for plants is editable

Build 46 (9-30-2011)

- Addition of Sediment Diagenesis "steady-state" model to increase model speed.
- Modifications to PFOS model to be more general
 - Editable K2s for Animals.
 - Improved gill-uptake for invertebrates.
- Modification of denitrification code in goal of simplifying calibration and alignment with other models.
- Updated HSPF WDM file linkage to be more general (doesn't require use of WinHSPF).
- Enabled importation of equilibrium CO2 concentrations to enable linkage to CO2SYS and similar models.
- Minor change to reaeration code to improve high-oxygen simulations.
- New CBOD to organic matter conversion relying on percent refractory detritus input.
- Fixed a problem in which underlying data loaded from the database would then be lost if "edit-underlying-data" was then selected.
- Clarified units of K_{Sed} in the Remineralization parameter screen.
- Improved study "notes" interface dramatically. Notes may now be an unlimited number of characters.
- Addition of output variables to clarify whether photosynthesis is sub-optimal due to high-light or low-light conditions.
- Clarified and improved TSI output including capability to average results seasonally.
- Addition of fishing pressure units conversion.
- Users Manual and Technical Documentation updates reflecting the above.

Build 45 (3/24/2011)

- Grid mode within a study. In other words, all animal, plant, and chemical parameters in a study can be examined, edited, and exported to Excel simultaneously
- Time varying evaporation option in the Site-Screen, with linkage from the water volume screen
- Enabled hourly loadings for the following variables: All nutrients, CO2, Oxygen, Inorganic suspended sediments (sand/silt/clay), TSS, Light, Organic Matter
- Optional alternative K₂ estimation for animals based on Barber (2003)
- Accounting of net boundary condition inputs vs. losses for each segment
- Refinements to Trophic State Index output
- Minor bullet-proofing of common parameterization errors
- Fixed bug writing Steinhaus indices in batch mode
- Fixed problem in linked mode in which biotic seed loadings could be overcounted
- Added "Predator" and "Prey" labels to trophic matrix entry screen for clarification

Build 44 (11-23-2010)

- Limited oxygen concentration to "twice saturation" in water under ice.
- Added capability to model fish stocking.

- Model will output K1, K2, and BCF.
- Model prevents hibernation and standby when a simulation is actively running.
- Threshold levels in graphs are saved.
- BAFs output in wet-weight and lipid-normalized units.

(Build 43 was a special "short-course" build and not distributed here)

Build 42 (4-15-2010)

- Fixed Problem in Chemical "Grid Mode" in which some columns were mislabeled (aerobic and anaerobic degradation).

Build 41 (3-31-2010)

- AQUATOX Databases search functions dramatically improved.
- AQUATOX Databases "Grid Mode" may be exported to Excel.
- Scientific Name added to Animal and Plant databases.
- Updated Context Sensitive Help to guide user through new capabilities.

Build 40 (3-19-2010)

- Software and Software Installer is 64-bit compatible
- Minor interface glitch fixed in which adding salinity to multi-segment runs was inadvertently disabled
- Minor change to calculation in light limitation due to canopy effects. (AQUATOX now assumes that 2% of incident radiation penetrates the canopy so a site that has 100% canopy cover still receives 2% light transmission.) This only affects sites in which canopy cover is entered as a constant value or time-series.
- Updated ICE (toxicity regressions) based on new EPA models released in February 2010 and improved AQUATOX ICE interface.
- Added an "output to CSV" option for uncertainty runs so that complete results for every iteration may be examined. Also allowed for non-random sampling for statistical sensitivity analyses.
- For sensitivity analysis, implemented a "reverse tornado" diagram (a.k.a. "effects diagram") that shows the effects of each parameter change on the overall simulation.
- Fixed the InstallAware installer so that it is now properly registering file-types. (APS and ALS file-types were not showing the proper icon nor was double-clicking on these files opening them in AQUATOX.)
- Added an option in the setup screen to trigger nitrogen fixation based on the N to P ratio.
- Added new output "P Diagenesis flux in kg since start of simulation" or "P Diag. Flux (cum.) (kg)."