

Quick BioPIC User Guide

March 19, 2015

This *Quick Guide* is intended for users of the application BioPIC (Bio Pathway Identification Criteria), which uses the Microsoft Excel 2013 platform. BioPIC was developed under ESTCP Project ER-201129 and it's intended to help users follow OSWER directive 9200.4-17P on Monitored Natural Attenuation (MNA) while identifying biostimulation and or bioaugmentation as potential alternatives.

FRAMEWORK: EPA MNA DIRECTIVE

BioPIC is organized around the USEPA lines of evidence for MNA Framework (USEPA, 1998 and 1998) where the first line of evidence is *Historical groundwater ... data that demonstrates a clear and meaningful trend of decreasing contaminant ...* Therefore, use of BioPIC requires that the user first applies a groundwater fate and transport model to determine whether the rate of attenuation of the contaminants will bring the highest concentrations of the contaminants in groundwater to acceptable concentrations before the groundwater reaches a receptor or a sentry well. If the predicted concentrations are acceptable, MNA is appropriate.

If MNA is appropriate, BioPIC offers guidance on developing information that can meet the U.S. EPA requirement for a second line of evidence *that can be used to demonstrate indirectly the type(s) of natural attenuation processes active at the site, and the rate at which such processes will reduce contaminant concentrations to required levels.* If MNA is not appropriate, BioPIC offers guidance on *in situ* bioremediation, and in particular whether it is useful to bioaugment the site with active microorganisms as well as biostimulate with nutrients.

BIOPIC

Please begin by opening the file titled BioPIC_2015.xlsm and when the screen first opens, please click on **enable macros**. Upon opening the file, you'll see 4 tabs (worksheets) at the bottom of the screen. The first tab, the **Home** tab is the starting point. By clicking the **Start** button, you will be lead to a stepwise diagnostic process with several **YES/NO** questions following the framework logic available in the **Overview** tab/worksheet.

BUTTONS:

- Most questions can be answered by clicking on one of 5 (five) potential options: **YES, NO, Decision Criteria, Help** and **Back**.
- When a **YES** or **NO** button is chosen, the next question will appear.
- If users are uncertain how to answer the question, a click on the **Decision Criteria** or **Help** button displays more detailed background information that should help the user to select the appropriate answer.
- By clicking the **Back** button, the user will be directed back to the previous question.

"FILES" TAB (the 4th WORKSHEET):

The last (4th) tab (worksheet) in BioPIC is titled "*Files*" and contains several Excel files as separate objects to aid users to enter data for further analysis. Users, for example, can click the "CSIA.XLSX", "Dhc.XLSX", "FeS.XLSX", "Magnetic Susceptibility.XLSX" or "Mole Percent Calculator.XLSX" buttons in the "Decision Criteria" box, and will be automatically directed to these tab "Files." By double-clicking the Excel button, the corresponding Excel file will be displayed.

At the time of this Webinar, March 19, 2015, we've conducted a beta-test and incorporated subsequent changes into the BioPIC 2015 version. Nonetheless, for a limited time only, users are encouraged to provide feedback and report incidents for continuous improvement of the BioPIC tool to Carmen A. Lebron; lebron.carmen.a@gmail.com, Dr. John Wilson; John Wilson; john@scissortailenv.com or Todd Wiedemeier at todd@thwa.com.