

Supplementary Figure 1. Microbial community structure of samples.

Relative contributions of dominant taxa in each well are shown. Samples ordered into four activity groups according to clustering in Fig 2A. Sequences were classified by the RDP Classifier. “Unclassified” stands for sequences assigned to a taxon that cannot be assigned to smaller subtaxa with 80% confidence.

A. Phyla composition. Other detected *Bacteria* include *Chlamydiae*, *Chloroflexi*, *Bacteroidetes*, *Gemmatimonadetes*, *Planctomycetes*, *Tenericutes*, *Nitrospira*, *Fusobacteria*, *Deinococcus-Thermus*, *Deferribacteres*, *TM7*, *Spirochaetes*, *WS3*, *OD1*, *OP10*, *Fibrobacteres*, *BRC1*, *Cyanobacteria*, *Lentisphaerae*, and unclassified *Bacteria*. These phyla were not present in all sites. **B.** *Proteobacteria* composition. **C.** *Deltaproteobacteria* composition. The average relative contribution of *Deltaproteobacteria* to the total community in that specific cluster of samples is given in parenthesis. Unc = Unclassified for the indicated taxa level.

Supplementary Table 1. Hydrology of well system and biogeochemical characterization of FRC Area 3 samples. Hydrology was characterized by a conservative tracer study on days 801 to 802 (November 1 to 2, 2005). Since the tracer was injected at FW104, tracer recovery and travel time at this well were defined as 100% and 0 h, respectively. Groundwater and sediment samples were retrieved on day 774 (October 5, 2005). Concentrations are in mM, unless otherwise stated (except pH). The Most Probable Number (MPN) results for iron-reducing, sulfate-reducing, and denitrifiers (Cardenas et al., Appl. Environ. Microbiol. **74**:3718–3729, 2008) were used to define bioactivity. The treatment system created three different areas: inner loop (FW104, FW026 and multilevel wells FW101 and FW102), outer loop (FW024, FW103 and multilevel well FW100), and a local background (B) represented by FW105.

† For multilevel sampling wells the well location is followed by the depth level where the sample was taken.

‡ Comparison of inner and outer loops was done with a two-tailed t-test, alpha = 0.05. ND= mathematically not defined. A portion of these results is published elsewhere (Xu et al., ISME J., **4**:1060–1070, 2010).