

SUPPLEMENT TO THE DISSERTATION

**LABORATORY AND FIELD INVESTIGATION OF CHLORINATED SOLVENTS
REMEDICATION IN SOIL AND GROUNDWATER**

by

SATHISHKUMAR SANTHARAM

B. Tech., Indian Institute of Technology, Madras (Chennai), India, 1992
M.S., Kansas State University, Manhattan, KS, USA, 1996

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Chemical Engineering
College of Engineering

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2008

Approved by:

Major Professor
Dr. Larry E Erickson

Table of Contents

Preface	iii
List of Figures	iv
List of Tables	xiv
Supplement to Chapter 2.....	1
Supplement to Chapter 3.....	21
Supplement to Chapter 4.....	64
Supplement to Chapter 5.....	126

Preface

This document is a supplement to the dissertation of Sathishkumar Santharam. The supplement contains original experimental data not included in the dissertation. This is a method to preserve all of the data in one location.

List of Figures

Figure S. 2. 1. Variation of CT and degradation compounds with distance along channel 6 on day 382, 3/29/05. SOME was added on days 203, 236, 266, 299, 328 and 359.	1
Figure S. 2. 2. Variation of CT and degradation compounds with distance along channel 6 on day 395, 4/11/05. SOME was added on days 203, 236, 266, 299, 328, 359 and 387.	2
Figure S. 2. 3. Variation of CT and degradation compounds with distance along channel 6 on day 409, 4/25/05. SOME was added on days 203, 236, 266, 299, 328, 359 and 387.	3
Figure S. 2. 4. Variation of CT and degradation compounds with distance along channel 6 on day 460, 6/15/05. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415 and 445 (well 3).....	4
Figure S. 2. 5. Variation of CT and degradation compounds with distance along channel 6 on day 555, 9/18/05. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415 and 445 (well 3).....	5
Figure S. 2. 6. Variation of CT and degradation compounds with distance along channel 6 on day 644, 12/15/05. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415 and 445 (well 3).....	6
Figure S. 2. 7. Variation of CT and degradation compounds with distance along channel 6 on day 686, 1/24/06. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415 and 445 (well 3).....	7
Figure S. 2. 8. Variation of CT and degradation compounds with distance along channel 6 on day 712, 2/21/06. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415 and 445 (well 3).....	8
Figure S. 2. 9. Variation of CT and degradation compounds with distance along channel 6 on day 775, 4/25/06. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415 and 445 (well 3).....	9

Figure S. 2. 10. Variation of CT and degradation compounds with distance along channel 6 on day 804, 5/24/06. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415 and 445 (well 3).....	10
Figure S. 2. 11. Variation of CT and degradation compounds with distance along channel 6 on day 831, 6/21/06. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415 and 445 (well 3).....	11
Figure S. 2. 12. Variation of CT and degradation compounds with distance along channel 6 on day 864, 7/24/06. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415, 445 (well 3) and 837.	12
Figure S. 2. 13. Variation of CT and degradation compounds with distance along channel 6 on day 928, 9/26/06. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415, 445 (well 3) and 837.	13
Figure S. 2. 14. Variation of CT and degradation compounds with distance along channel 6 on day 984, 11/23/06. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415, 445 (well 3), 837 and 957 (well 2).....	14
Figure S. 2. 15. Percent organic matter content (foc) in the soil samples of channels 4, 5 and 6; samples were collected on August 10, 2004, day 151. Samples collected at a distance of 52 cm, 57 cm, and 57 cm from inlet for channels 4, 5 and 6, respectively.	15
Figure S. 2. 16. CMes and Methane profile, in channel 4 soil, as a function of depth from the surface of the soil; day 995, December 3, 2006. Soil samples were collected at a distance of 26 cm (?) from inlet.	16
Figure S. 3. 1. Variation of PCE and degradation compounds with distance along channel 1 on day 395, 4/11/05. Soy Oil Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, and 359.....	22
Figure S. 3. 2. Variation of PCE and degradation compounds with distance along channel 1 on day 409, 4/25/05. Soy Oil Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, 359, 387, 415, and 417 (well 3).	23
Figure S. 3. 3. Variation of PCE and degradation compounds with distance along channel 1 on day 555, 9/18/05. Methane concentrations are on right-hand (secondary) y-axis. Soy Oil	

Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, 359, 387, 415, and 417 (well 3).....	24
Figure S. 3. 4. Variation of PCE and degradation compounds with distance along channel 1 on day 590, 10/23/05. Methane concentrations are on right-hand (secondary) y-axis. Soy Oil Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, 359, 387, 415, and 417 (well 3).....	25
Figure S. 3. 5. Variation of PCE and degradation compounds with distance along channel 1 on day 686, 1/24/06. Methane concentrations are on right-hand (secondary) y-axis. KB-1 was injected on day 605, 11/7/05. Soy Oil Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, 359, 387, 415, 417 (well 3) and 594.	26
Figure S. 3. 6. Variation of PCE and degradation compounds with distance along channel 1 on day 741, 3/22/06. Methane concentrations are on right-hand (secondary) y-axis. KB-1 was injected on day 605, 11/7/05. Soy Oil Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, 359, 387, 415, 417 (well 3) and 594.	27
Figure S. 3. 7. Variation of PCE and degradation compounds with distance along channel 1 on day 775, 4/25/06. KB-1 was injected on day 775, 4/25/06. Soy Oil Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, 359, 387, 415, 417 (well 3) and 594.....	28
Figure S. 3. 8. Variation of PCE and degradation compounds with distance along channel 1 on day 804, 5/24/06. Methane concentrations are on right-hand (secondary) y-axis. KB-1 was injected on day 605, 11/7/05. Soy Oil Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, 359, 387, 415, 417 (well 3) and 594.	29
Figure S. 3. 9. Variation of PCE and degradation compounds with distance along channel 1 on day 831, 6/21/06. Methane concentrations are on right-hand (secondary) y-axis. KB-1 was injected on day 605, 11/7/05 and day 811, 6/1/06. Soy Oil Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, 359, 387, 415, 417 (well 3) and 594.	30
Figure S. 3. 10. Variation of PCE and degradation compounds with distance along channel 1 on day 928, 9/26/06. KB-1 was injected on day 605, 11/7/05 and day 811, 6/1/06. Soy Oil Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, 359, 387, 415, 417 (well 3) and 594.	31
Figure S. 3. 11. Variation of PCE and degradation compounds with distance along channel 2 on day 395, 4/11/05. Methane concentrations are on right-hand (secondary) y-axis. Glucose	

solution was added on days 110, 151, 173, 203 and 236. Corn starch was added on days 266, 299 and 328.....	32
Figure S. 3. 12. Variation of PCE and degradation compounds with distance along channel 2 on day 456, 6/11/05; Glucose solution was added on days 110, 151, 173, 203 and 236. Corn starch was on days 266, 299 and 328.....	33
Figure S. 3. 13. Variation of PCE and degradation compounds with distance along channel 2 on day 496, 7/21/05; Glucose solution was added on days 110, 151, 173, 203 and 236. Corn starch was on days 266, 299 and 328.....	34
Figure S. 3. 14. Variation of PCE and degradation compounds with distance along channel 2 on day 590, 10/23/05; Methane concentrations are on right-hand (secondary) y-axis. Glucose solution was added on days 110, 151, 173, 203, 236, 266 and 299. Corn starch was on days 266, 299, 328 and 522.....	35
Figure S. 3. 15. Variation of PCE and degradation compounds with distance along channel 2 on day 644, 12/15/05. KB-1 was injected on day 591, 10/24/05; Glucose solution was added on days 110, 151, 173, 203, 236, and 564. Corn starch was added on days 266, 299, 328 and 522.....	36
Figure S. 3. 16. Variation of PCE and degradation compounds with distance along channel 2 on day 686, 1/24/06. Methane concentrations are on right-hand (secondary) y-axis. KB-1 was injected on day 591, 10/24/05; Glucose solution was added on days 110, 151, 173, 203, 236, 564 and 676. Corn starch was added on days 266, 299, 328 and 522.	37
Figure S. 3. 17. Variation of PCE and degradation compounds with distance along channel 2 on day 712, 2/21/06. KB-1 was injected on day 591, 10/24/05; Glucose solution was added on days 110, 151, 173, 203, 236, 564 and 676. Corn starch was added on days 266, 299, 328 and 522.....	38
Figure S. 3. 18. Variation of PCE and degradation compounds with distance along channel 2 on day 775, 4/25/06. KB-1 was injected on day 591, 10/24/05; Glucose solution was added on days 110, 151, 173, 203, 564 and 676. Corn starch was added on days 266, 299, 328 and 522.....	39
Figure S. 3. 19. Variation of PCE and degradation compounds with distance along channel 2 on day 804, 5/24/06. Methane concentrations are on right hand (secondary) y-axis. KB-1 was	

injected on day 591, 10/24/05; Glucose solution was added on days 110, 151, 173, 203, 299, 564, 676 and 800. Corn starch was added on days 266, 299, 328 and 522.	40
Figure S. 3. 20. Variation of PCE and degradation compounds with distance along channel 2 on day 864, 7/24/06. KB-1 injected on 10/24/05 (day 591) & 5/31/06 (day 810); Glucose solution was added on days 110, 151, 173, 203, 236, 564, 676 and 800. Corn starch was added on days 266, 299, 328 and 522.....	41
Figure S. 3. 21. Variation of PCE and degradation compounds with distance along channel 2 on day 928, 9/26/06. KB-1 was injected on 10/24/05 (day 591) & 5/31/06 (day 810). Glucose solution was added on days 110, 151, 173, 203, 236, 564, 676, 800 and 901. Corn starch was added on days 266, 299, 328 and 522.....	42
Figure S. 3. 22. Organic matter content fraction (f_{oc} , expressed as %) in the soil samples of channels 1 & 3; Soil samples were collected on August 9, 2004, day 150.	43
Figure S. 3. 23. Variation of PCE, DCE and methane in microcosm with glucose 0.005%, Batch 1; PCE was spiked on day 14.....	44
Figure S. 3. 24. Variation of PCE, DCE and methane in control microcosm, Batch 2; PCE was spiked on day 11.	45
Figure S. 3. 25. Variation of PCE, DCE and methane in microcosm with lactic acid 0.85%, Batch 2; PCE was spiked on day 11 and 102. Carbon tetrachloride was added on day 102 to detect leakage.	46
Figure S. 3. 26. Variation of PCE, DCE and methane in microcosm with yeast extract 0.01%, Batch 2; PCE was spiked on day 11.	47
Figure S. 3. 27. Variation of PCE, DCE and methane in microcosm with glucose 0.01% and yeast extract 0.01%, Batch 2; PCE was spiked on day 11. Carbon tetrachloride was added on day 102 to detect leakage.	48
Figure S. 3. 28. Variation of PCE, DCE and methane in control microcosm, Batch 3; PCE was spiked on day 0.	49
Figure S. 3. 29. Variation of PCE, DCE and methane in microcosm with soy oil methyl ester (SOME) 0.1%, Batch 3; PCE was spiked on day 0 and day 86. This may be a leaky vial. .	50
Figure S. 3. 30. Variation of PCE, DCE and methane in microcosm with glucose 0.01% and yeast extract 0.01%, Batch 3; PCE was spiked on day 0.....	51

Figure S. 3. 31. Variation of PCE, DCE and methane in microcosm with lactic acid 0.085% and yeast extract 0.01%, Batch 3; PCE was spiked on days 0, 20 and 72. Carbon tetrachloride was spiked on day 72 to detect leakage. This is a leaky vial.	52
Figure S. 3. 32. Variation of PCE, TCE, VC, DCE and methane in control microcosm, Batch 4 (ch 1 outlet liquid); KB-1 was added on day 23.	53
Figure S. 3. 33. Variation of PCE, TCE, DCE and methane in soy oil methyl ester 0.1%, Batch 4 (ch 1 outlet liquid); KB-1 was added on day 23.	54
Figure S. 3. 34. Variation of PCE, TCE, DCE, VC and methane in microcosm with soy oil methyl ester 0.1% and yeast extract 0.01%, Batch 4 (ch 1 outlet liquid); KB-1 was added on day 23. Methane amounts are on right hand (secondary) y-axis.	55
Figure S. 3. 35. Variation of PCE, TCE, DCE, VC and methane in yeast extract 0.01%, Batch 4 (ch 1 outlet liquid); KB-1 was added on day 23. This may be a leaky vial.	56
Figure S. 3. 36. Variation of PCE, TCE, DCE, VC and methane in glucose 0.01% and yeast extract 0.01%, Batch 4 (ch 1 outlet liquid); KB-1 was added on day 23.	57
Figure S. 4. 1. Bromide concentrations in MW-8D (injection well); Injected concentration = 500 mg/L, 8/2/2004, day 0; groundwater velocity for dilution model is 0.06 m/day (0.2 ft/day).	65
Figure S. 4. 2. Bromide concentrations in MW-8D (injection well); Injected concentration = 500 mg/L, 8/2/2004, day 0; groundwater velocity for dilution model is 0.18 m/day (0.6 ft/day).	66
Figure S. 4. 3. Bromide concentrations in MW-8D (injection well); Injected concentration = 500 mg/L, 8/2/2004, day 0; groundwater velocity for dilution model is 0.24 m/day (0.8 ft/day).	67
Figure S. 4. 4. Nitrate concentrations at the middle depth samples (23 ft bgs) in well MW-8S (tracer injection well); Data from tracer study 2004, day 0 is 9/15/04.	68
Figure S. 4. 5. Nitrate concentrations at the middle depth samples (23 ft bgs) in well MW-9S (tracer injection well); Data from tracer study 2004, day 0 is 9/15/04.	69
Figure S. 4. 6. Nitrate concentrations at the middle depth samples (23 ft bgs) in well MW-10S (tracer injection well); Data from tracer study 2004, day 0 is 9/15/04.	70

Figure S. 4. 7. Nitrate concentrations at the middle depth samples (23 ft bgs) in well MW-12S (tracer injection well); Data from tracer study 2004, day 0 is 9/15/04. 71

Figure S. 4. 8. Nitrate concentrations at the middle depth samples (23 ft bgs) in well MW-7S (tracer injection well); Data from tracer study 2004, day 0 is 9/15/04. 72

Figure S. 4. 9. Nitrate concentrations at the middle depth samples (23 ft bgs) in well MW-11S (tracer injection well); Data from tracer study 2004, day 0 is 9/15/04. 73

Figure S. 4. 10. Sulfate concentrations at the middle depth samples (23 ft bgs) in the shallow and deep wells MW-8 and MW-9; Data from tracer study 2004, day 0 is 9/15/04 for shallow wells and day 0 is 8/16/04 for deep wells. 74

Figure S. 4. 11. Sulfate concentrations at the middle depth samples (23 ft bgs) in the shallow and deep wells MW-7, MW-10 and MW-12; Data from tracer study 2004, day 0 is 9/15/04 for shallow wells and day 0 is 8/16/04 for deep wells..... 75

Figure S. 4. 12. Sulfate concentrations at the middle depth samples (23 ft bgs) in the shallow and deep wells MW-7, MW-10 and MW-12; Data from tracer study 2004, day 0 is 9/15/04 for shallow wells and day 0 is 8/16/04 for deep wells..... 76

Figure S. 4. 13. Chloride concentrations at the middle depth samples (23 ft bgs) in the shallow and deep wells MW-8 and MW-9; Data from tracer study 2004, day 0 is 9/15/04 for shallow wells and day 0 is 8/16/04 for deep wells. 77

Figure S. 4. 14. Chloride concentrations at the middle depth samples (23 ft bgs) in the shallow and deep wells MW-7, MW-10 and MW-12; Data from tracer study 2004, day 0 is 9/15/04 for shallow wells and day 0 is 8/16/04 for deep wells..... 78

Figure S. 4. 15. Bromide concentrations in MW-5D (~ 110 ft up-gradient from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005) (Injected bromide concentration = 670 mg/L); injection of nutrients and KB-1 on day 56 (Oct 13, 2005); injection of nutrients on day 197 (Mar 3, 2006) (Injected bromide concentration = 1340 mg/L); and injection of nutrients on day 348 (Aug 1, 2006). 79

Figure S. 4. 16. Bromide concentrations in MW-7S (open symbols) and MW-7D (filled symbols), approximately 20 ft north from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005) (Injected bromide concentration = 670 mg/L); injection of nutrients and KB-1 on day 56 (Oct 13, 2005); injection of nutrients on day 197

(Mar 3, 2006) (Injected bromide concentration = 1340 mg/L); and injection of nutrients on day 348 (Aug 1, 2006).	80
Figure S. 4. 17. Bromide concentrations in MW-11S (open symbols) and MW-11D (filled symbols), approximately 20 ft south from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005) (Injected bromide concentration = 670 mg/L); injection of nutrients and KB-1 on day 56 (Oct 13, 2005); injection of nutrients on day 197 (Mar 3, 2006) (Injected bromide concentration = 1340 mg/L); and injection of nutrients on day 348 (Aug 1, 2006).	81
Figure S. 4. 18. Nitrate concentrations in MW-7S (open symbols) and MW-7D (filled symbols), approximately 20 ft north from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).	82
Figure S. 4. 19. Nitrate concentrations in MW-11S (open symbols) and MW-11D (filled symbols), approximately 20 ft south from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).	83
Figure S. 4. 20. Sulfate concentrations in MW-8S (open symbols) and MW-8D (filled symbols), approximately 5 ft upgradient from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).	84
Figure S. 4. 21. Sulfate concentrations in MW-9S (open symbols) and MW-9D (filled symbols), approximately 5 ft down-gradient from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).	85
Figure S. 4. 22. Sulfate concentrations in MW-10S (open symbols) and MW-10D (filled symbols), approximately 15 ft down-gradient from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).	86
Figure S. 4. 23. Sulfate concentrations in MW-12S (open symbols) and MW-12D (filled symbols), approximately 75 ft down-gradient from injection location). Injection of nutrients	

between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).	87
Figure S. 4. 24. Sulfate concentrations in MW-5D, approximately 110 ft up-gradient from injection location. Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).	88
Figure S. 4. 25. Sulfate concentrations in MW-7S (open symbols) and MW-7D (filled symbols), approximately 20 ft north from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).	89
Figure S. 4. 26. Sulfate concentrations in MW-11S (open symbols) and MW-11D (filled symbols), approximately 20 ft south from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).	90
Figure S. 4. 27. Chloride concentrations in MW-8S (open symbols) and MW-8D (filled symbols), approximately 5 ft up-gradient from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).	91
Figure S. 4. 28. Chloride concentrations in MW-9S (open symbols) and MW-9D (filled symbols), approximately 5 ft down-gradient from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).	92
Figure S. 4. 29. Chloride concentrations in MW-10S (open symbols) and MW-10D (filled symbols), approximately 15 ft down-gradient from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).	93
Figure S. 4. 30. Chloride concentrations in MW-12S (open symbols) and MW-12D (filled symbols), approximately 75 ft down-gradient from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).	94

Figure S. 4. 31. Chloride concentrations in MW-5D, approximately 110 ft up-gradient from injection location. Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006). 95

Figure S. 4. 32. Chloride concentrations in MW-7S (open symbols) and MW-7D (filled symbols), approximately 20 ft north from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006). 96

Figure S. 4. 33. Chloride concentrations in MW-11S (open symbols) and MW-11D (filled symbols), approximately 20 ft south from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006). 97

List of Tables

Table S. 2. 1. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 230, 10/28/2004) collected from channels 4, 5 and 6. Soil samples were collected at a distance of 65 cm from inlet.	17
Table S. 2. 2. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 354, 3/1/2005) collected from channels 4, 5 and 6. Soil samples were collected at a distance of 90 cm from inlet.	18
Table S. 2. 3. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 812, 6/1/2006) collected from channels 4, 5 and 6. Soil samples were collected at a distance of 37, 12 and 12 cm from inlet for channels 4, 5 and 6 respectively.	19
Table S. 2. 4. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 995, 12/3/2006) collected from channels 4, 5 and 6. Soil samples were collected at a distance of 26 cm from inlet.	20
Table S. 3. 1. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 229, 10/27/2004) collected from channels 1, 2 and 3. Soil samples were collected at a distance of 65 cm from inlet.	58
Table S. 3. 2. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 353, 2/28/2005) collected from channels 1, 2 and 3. Soil samples were collected at a distance of 90 cm from inlet in channels 1 and 2, and 100 cm from inlet in channel 3.	59
Table S. 3. 3. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 385, 4/1/2005) collected from channel 2. Soil samples were collected while installing monitoring wells. Samples were collected at a depth of 37 cm for monitoring wells 1 to 5. An additional sample was collected at a depth of 41 cm at well 5.	60
Table S. 3. 4. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 812, 6/10/2006) collected from channels 1, 2 and 3. Soil samples were collected at a distance of 10 cm, 14 cm, and 30 cm from inlet in channels 1, 2, and 3, respectively.	61

Table S. 3. 5. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 955, 10/23/2006) collected from channel 1*.....	62
Table S. 3. 6. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 987, 11/26/2006) collected from channels 2 and 3. Soil samples were collected at a distance of 32 cm and 27 cm from inlet in channels 2 and 3, respectively. ...	63
Table S. 4. 1. Concentrations (mg/L) of anions in the mid-campus creek water*.....	98
Table S. 4. 2. Concentrations (mg/L) of anions in MW-8D. Nitrate concentrations were low (less than 0.1 mg/L) in the deep zone. Bioremediation pilot study was started on August 18, 2005, day 0.....	99
Table S. 4. 3. Concentrations (mg/L) of anions in MW-9D. Nitrate concentrations were low (less than 0.1 mg/L) in the deep zone. Bioremediation pilot study was started on August 18, 2005, day 0.....	103
Table S. 4. 4. Concentrations (mg/L) of anions in MW-10D. Nitrate concentrations were low (less than 0.1 mg/L) in the deep zone. Bioremediation pilot study was started on August 18, 2005, day 0.....	107
Table S. 4. 5. Concentrations (mg/L) of anions in MW-12D. Nitrate concentrations were low (less than 0.1 mg/L) in the deep zone. Bioremediation pilot study was started on August 18, 2005, day 0.....	110
Table S. 4. 6. Concentrations (mg/L) of anions in MW-7D. Nitrate concentrations were low (less than 0.1 mg/L) in the deep zone. Bioremediation pilot study was started on August 18, 2005, day 0.....	113
Table S. 4. 7. Concentrations (mg/L) of anions in at MW-11D. Nitrate concentrations were low (less than 0.1 mg/L) in the deep zone. Bioremediation pilot study was started on August 18, 2005, day 0.....	114
Table S. 4. 8. Concentrations (mg/L) of anions in of chlorinated ethenes and methane at MW-5D. Bioremediation pilot study was started on August 18, 2005, day 0.	115
Table S. 4. 9. Concentrations (mg/L) of anions in MW-8S. Bioremediation pilot study was started on August 18, 2005, day 0.....	116
Table S. 4. 10. Concentrations (mg/L) of anions in MW-9S. Bioremediation pilot study was started on August 18, 2005, day 0.....	118

Table S. 4. 11. Concentrations (mg/L) of anions in MW-10S. Bioremediation pilot study was started on August 18, 2005, day 0.....	121
Table S. 4. 12. Concentrations (mg/L) of anions in MW-12S. Bioremediation pilot study was started on August 18, 2005, day 0.....	123
Table S. 4. 13. Concentrations (mg/L) of anions in MW-7S. Bioremediation pilot study was started on August 18, 2005, day 0.....	124
Table S. 4. 14. Concentrations (mg/L) of anions in MW-11S. Bioremediation pilot study was started on August 18, 2005, day 0.....	125
Table S. 5. 1. Concentrations (μM) of chlorinated ethenes and methane at MW-8D. Bioremediation pilot study was started on August 18, 2005, day 0.	127
Table S. 5. 2. Concentrations (μM) of chlorinated ethenes and methane at MW-9D. Bioremediation pilot study was started on August 18, 2005, day 0.	130
Table S. 5. 3. Concentrations (μM) of chlorinated ethenes and methane at MW-10D. Bioremediation pilot study was started on August 18, 2005, day 0.	134
Table S. 5. 4. Concentrations (μM) of chlorinated ethenes and methane at MW-12D. Bioremediation pilot study was started on August 18, 2005, day 0.	137
Table S. 5. 5. Concentrations (μM) of chlorinated ethenes and methane at MW-7D. Bioremediation pilot study was started on August 18, 2005, day 0.	140
Table S. 5. 6. Concentrations (μM) of chlorinated ethenes and methane at MW-11D. Bioremediation pilot study was started on August 18, 2005, day 0.	142
Table S. 5. 7. Concentrations (μM) of chlorinated ethenes and methane at MW-5D. Bioremediation pilot study was started on August 18, 2005, day 0.	143
Table S. 5. 8. Concentrations (μM) of chlorinated ethenes and methane at MW-8S. Bioremediation pilot study was started on August 18, 2005, day 0.	145
Table S. 5. 9. Concentrations (μM) of chlorinated ethenes and methane at MW-9S. Bioremediation pilot study was started on August 18, 2005, day 0.	148
Table S. 5. 10. Concentrations (μM) of chlorinated ethenes and methane at MW-10S. Bioremediation pilot study was started on August 18, 2005, day 0.	152

Table S. 5. 11. Concentrations (μM) of chlorinated ethenes and methane at MW-12S. Bioremediation pilot study was started on August 18, 2005, day 0.	156
Table S. 5. 12. Concentrations (μM) of chlorinated ethenes and methane at MW-7S. Bioremediation pilot study was started on August 18, 2005, day 0.	159
Table S. 5. 13. Concentrations (μM) of chlorinated ethenes and methane at MW-11S. Bioremediation pilot study was started on August 18, 2005, day 0.	161

Supplement to Chapter 2

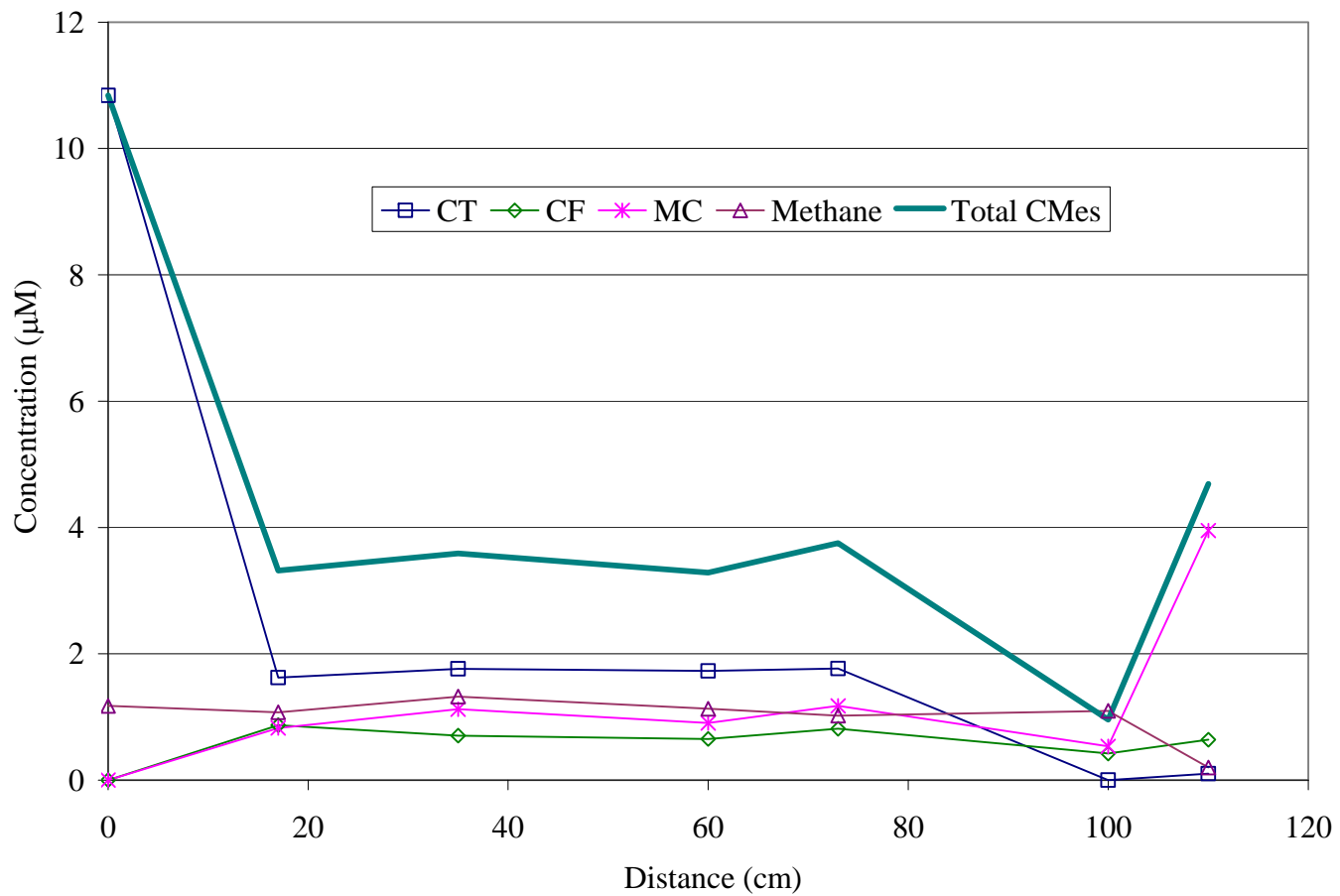


Figure S. 2. 1. Variation of CT and degradation compounds with distance along channel 6 on day 382, 3/29/05. SOME was added on days 203, 236, 266, 299, 328 and 359.

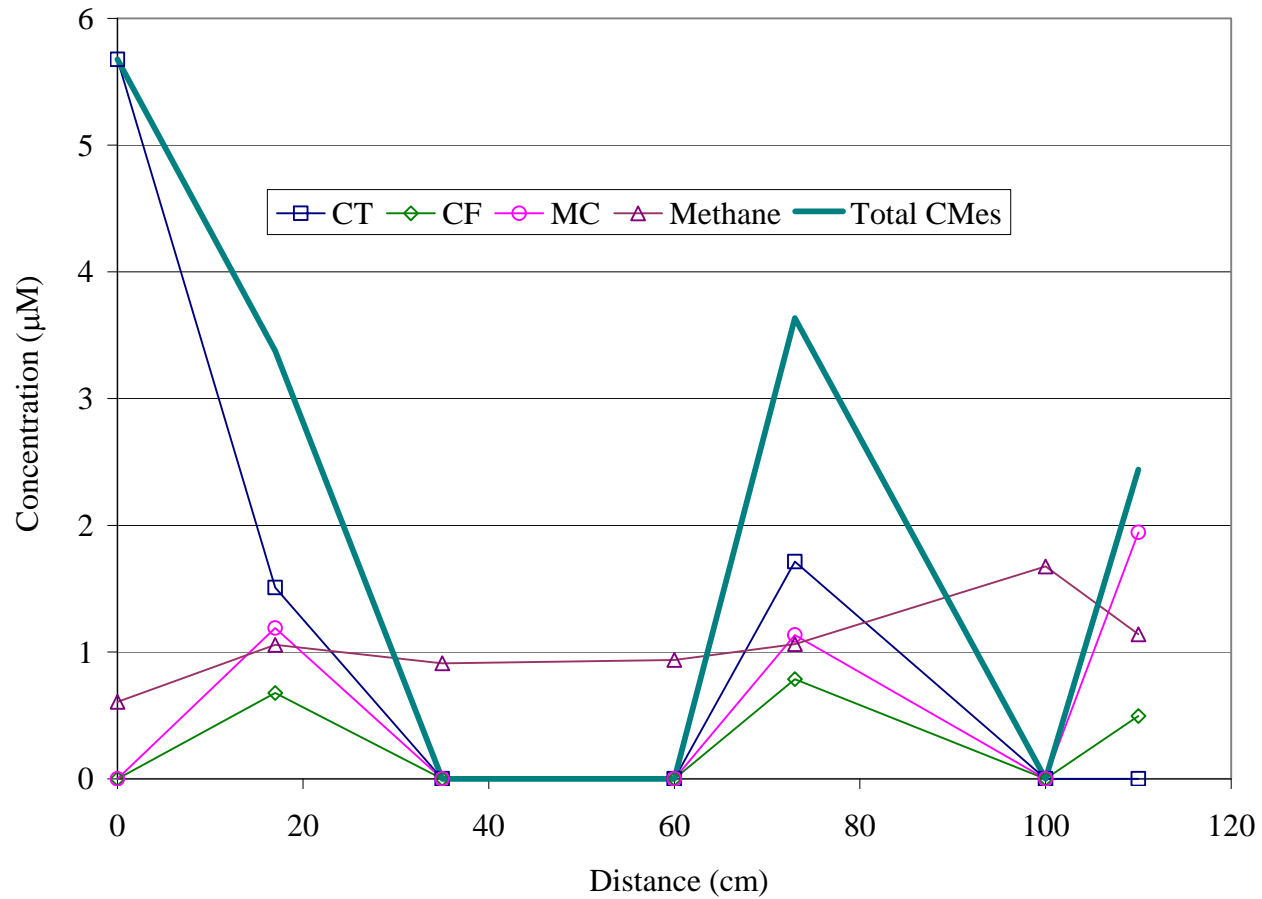


Figure S. 2. 2. Variation of CT and degradation compounds with distance along channel 6 on day 395, 4/11/05. SOME was added on days 203, 236, 266, 299, 328, 359 and 387.

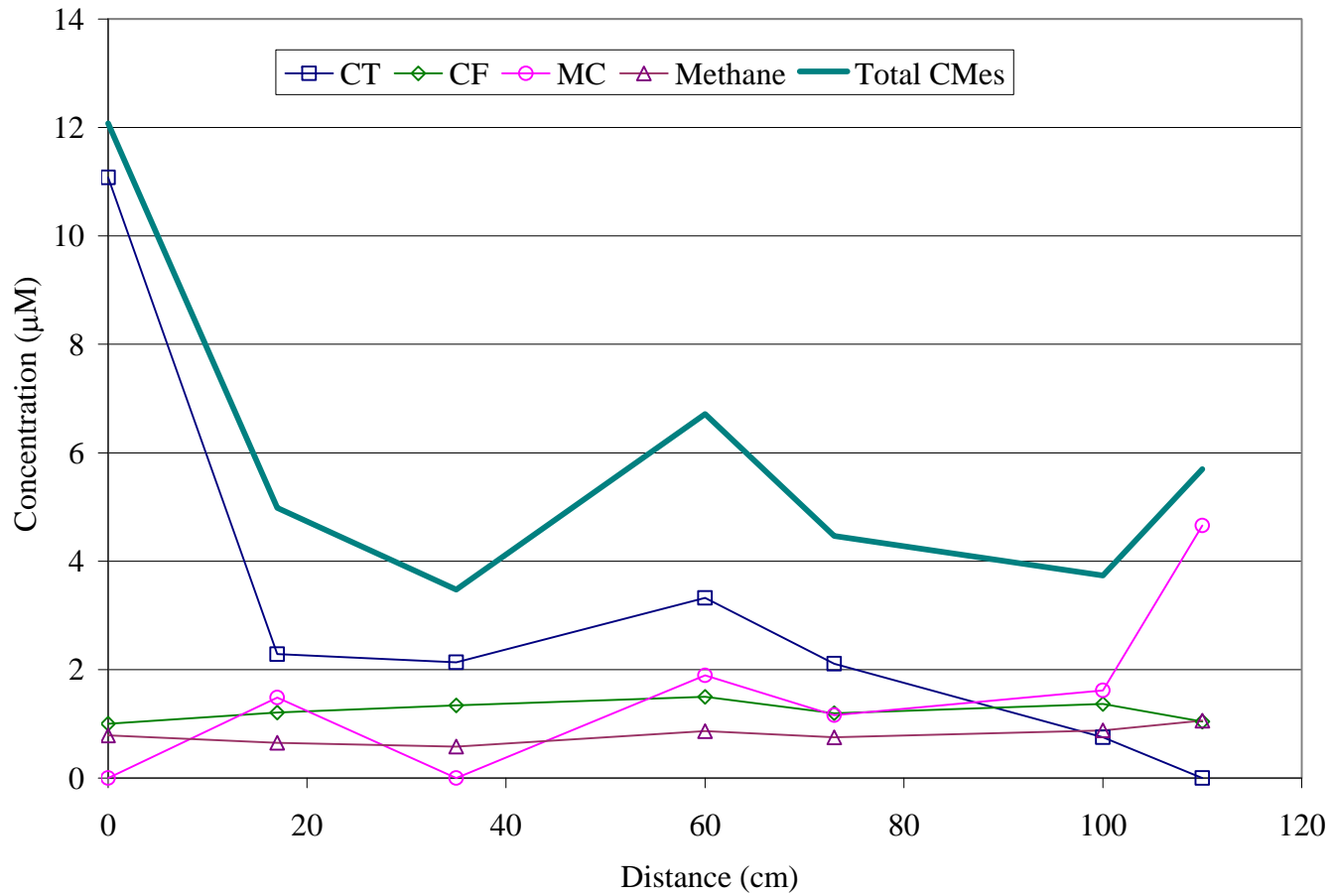


Figure S. 2. 3. Variation of CT and degradation compounds with distance along channel 6 on day 409, 4/25/05. SOME was added on days 203, 236, 266, 299, 328, 359 and 387.

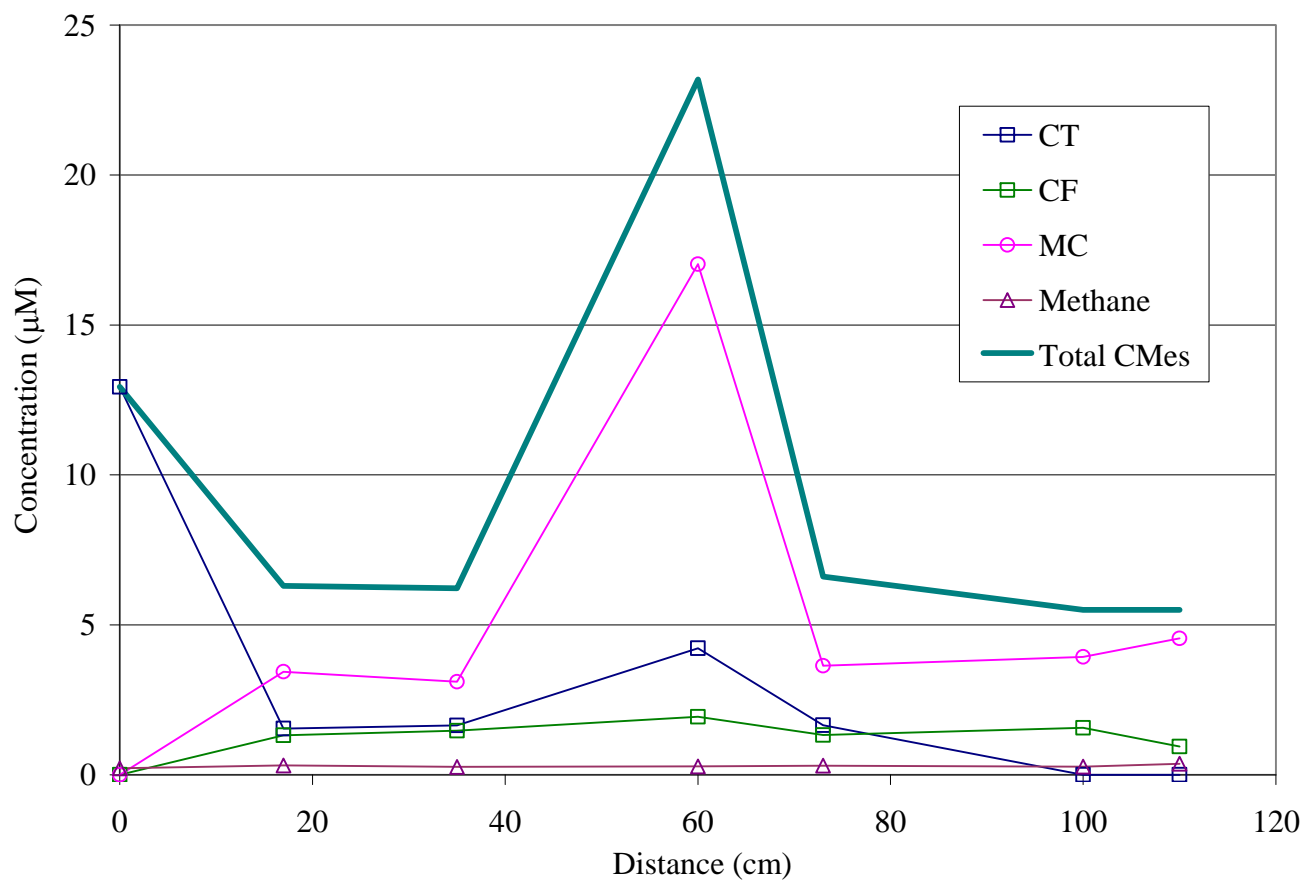


Figure S. 2. 4. Variation of CT and degradation compounds with distance along channel 6 on day 460, 6/15/05. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415 and 445 (well 3).

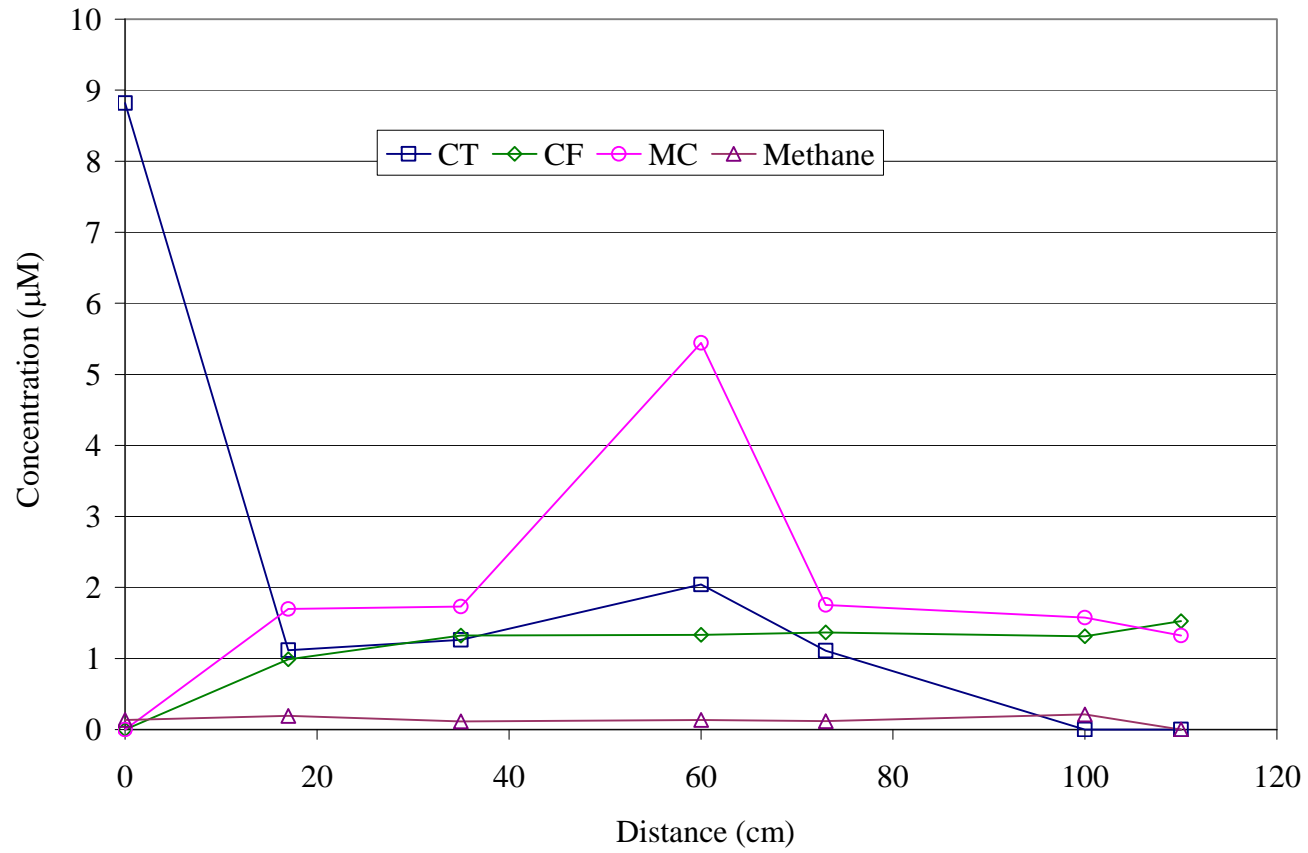


Figure S. 2. 5. Variation of CT and degradation compounds with distance along channel 6 on day 555, 9/18/05. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415 and 445 (well 3).

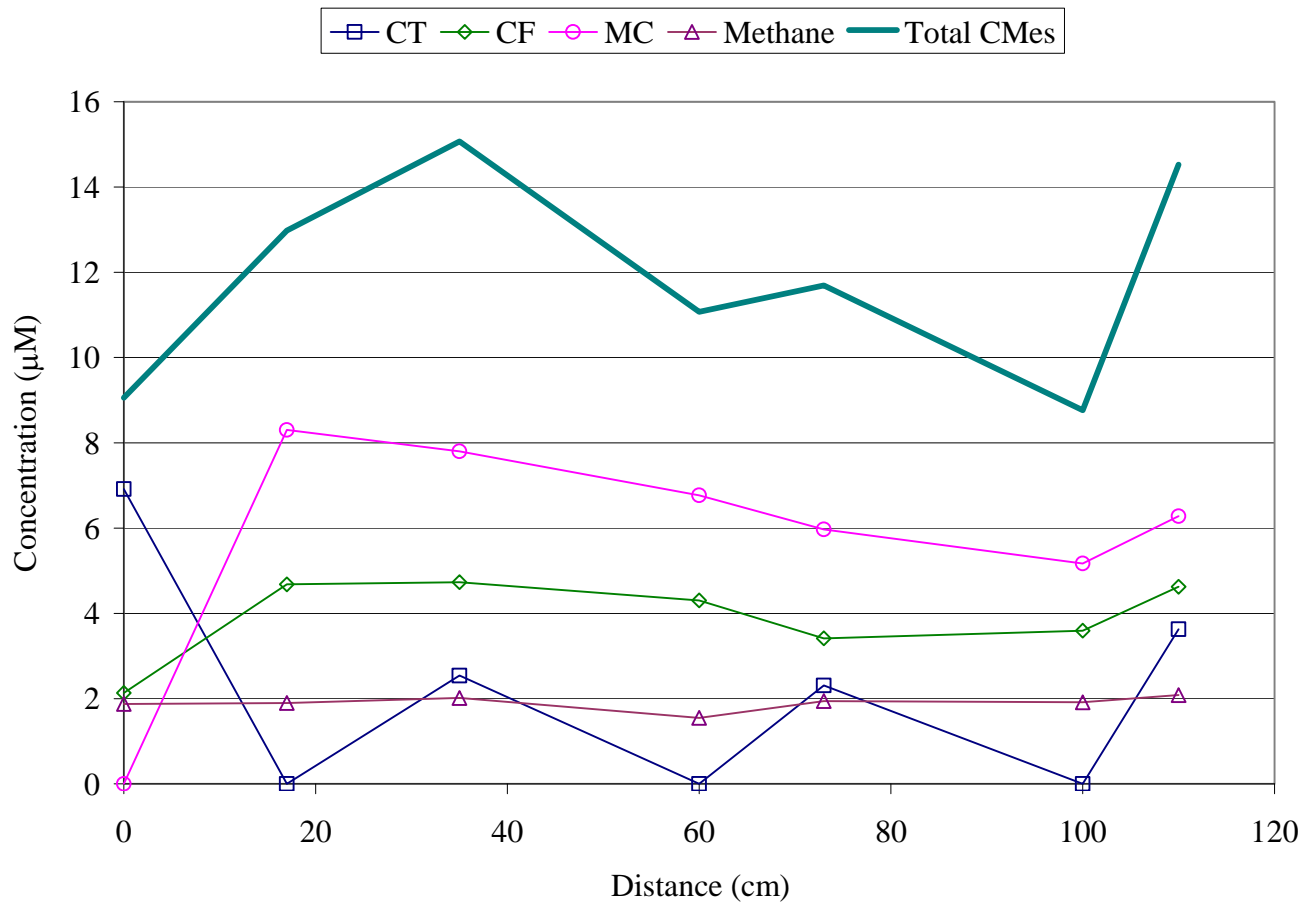


Figure S. 2. 6. Variation of CT and degradation compounds with distance along channel 6 on day 644, 12/15/05. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415 and 445 (well 3).

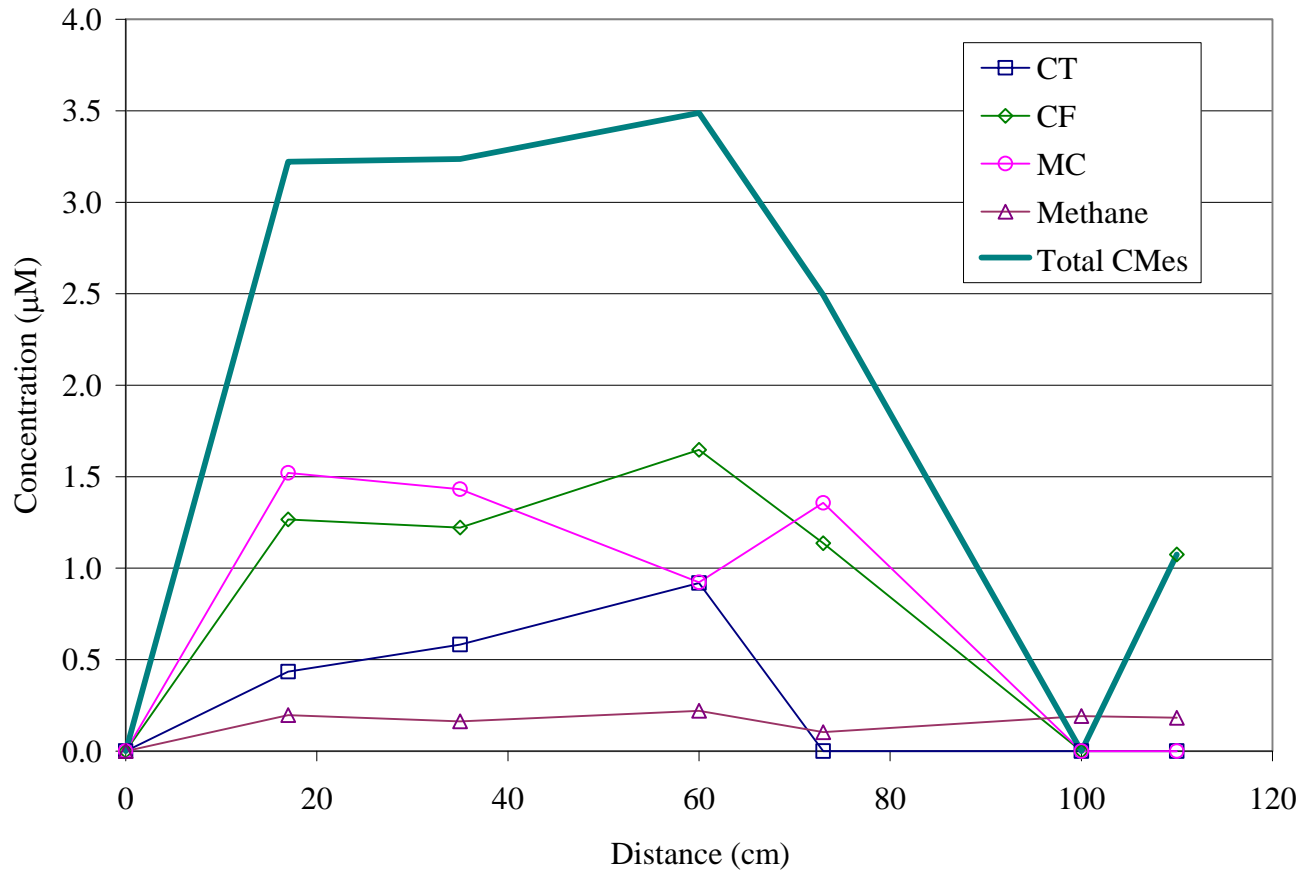


Figure S. 2. 7. Variation of CT and degradation compounds with distance along channel 6 on day 686, 1/24/06. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415 and 445 (well 3).

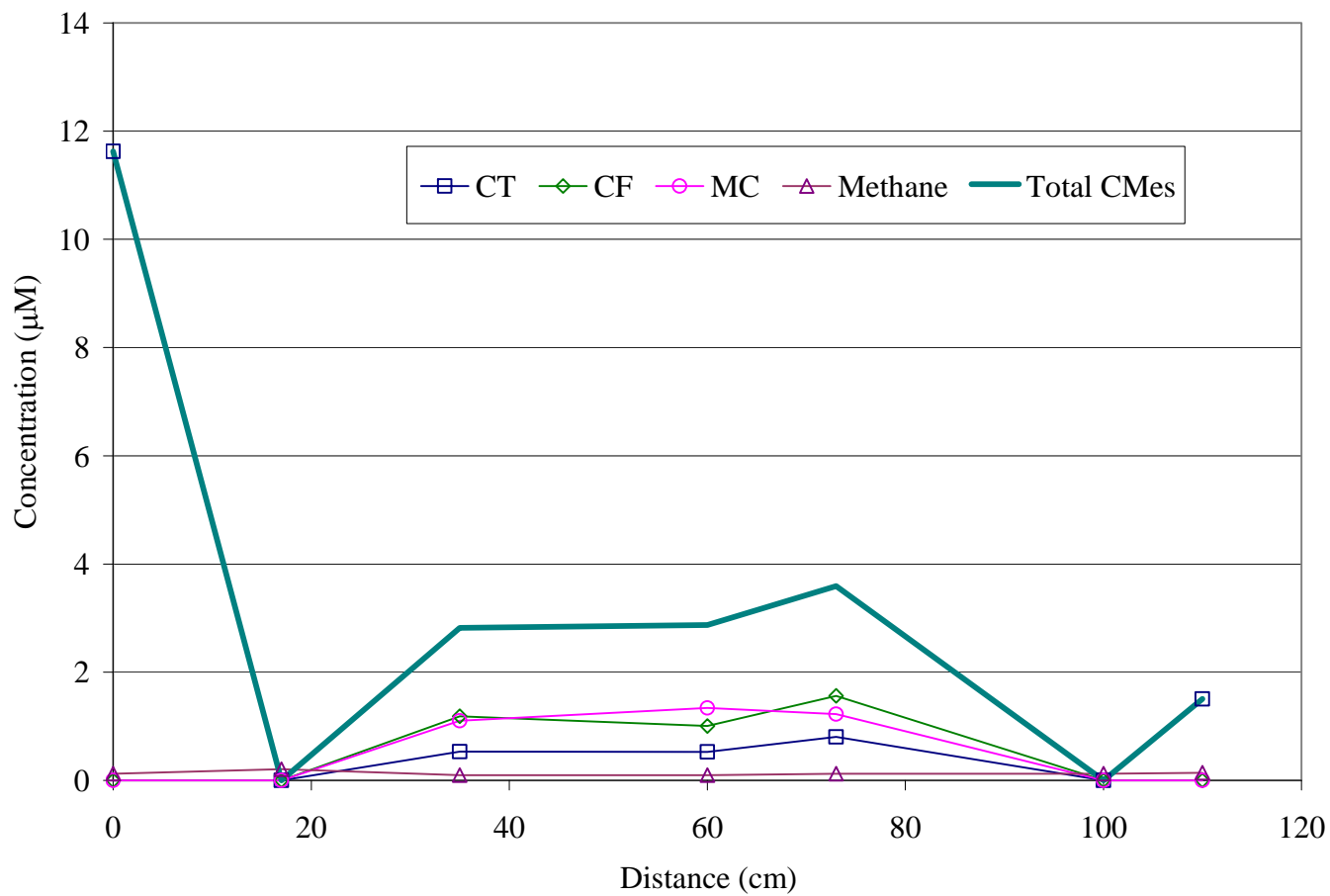


Figure S. 2. 8. Variation of CT and degradation compounds with distance along channel 6 on day 712, 2/21/06. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415 and 445 (well 3).

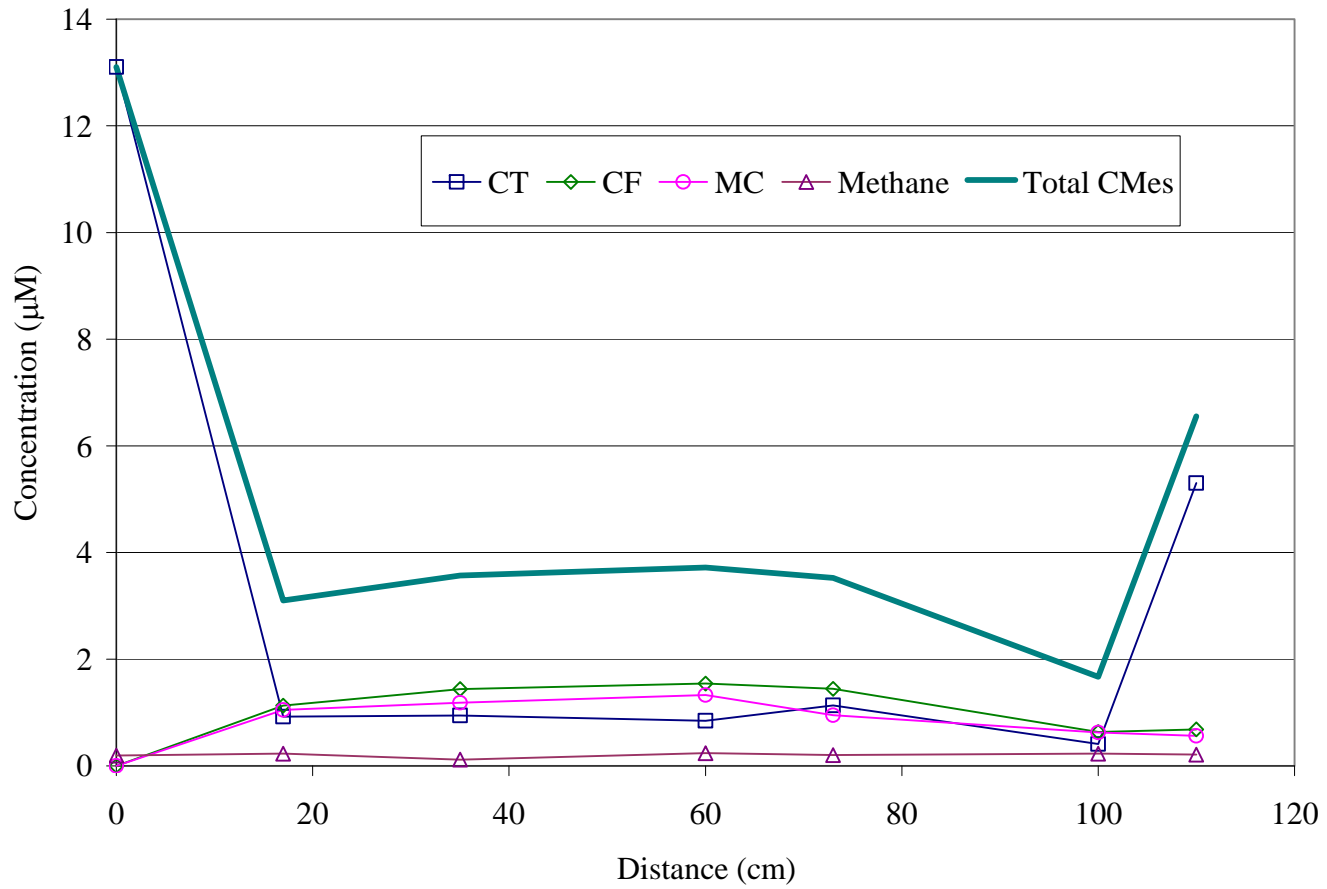


Figure S. 2. 9. Variation of CT and degradation compounds with distance along channel 6 on day 775, 4/25/06. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415 and 445 (well 3).

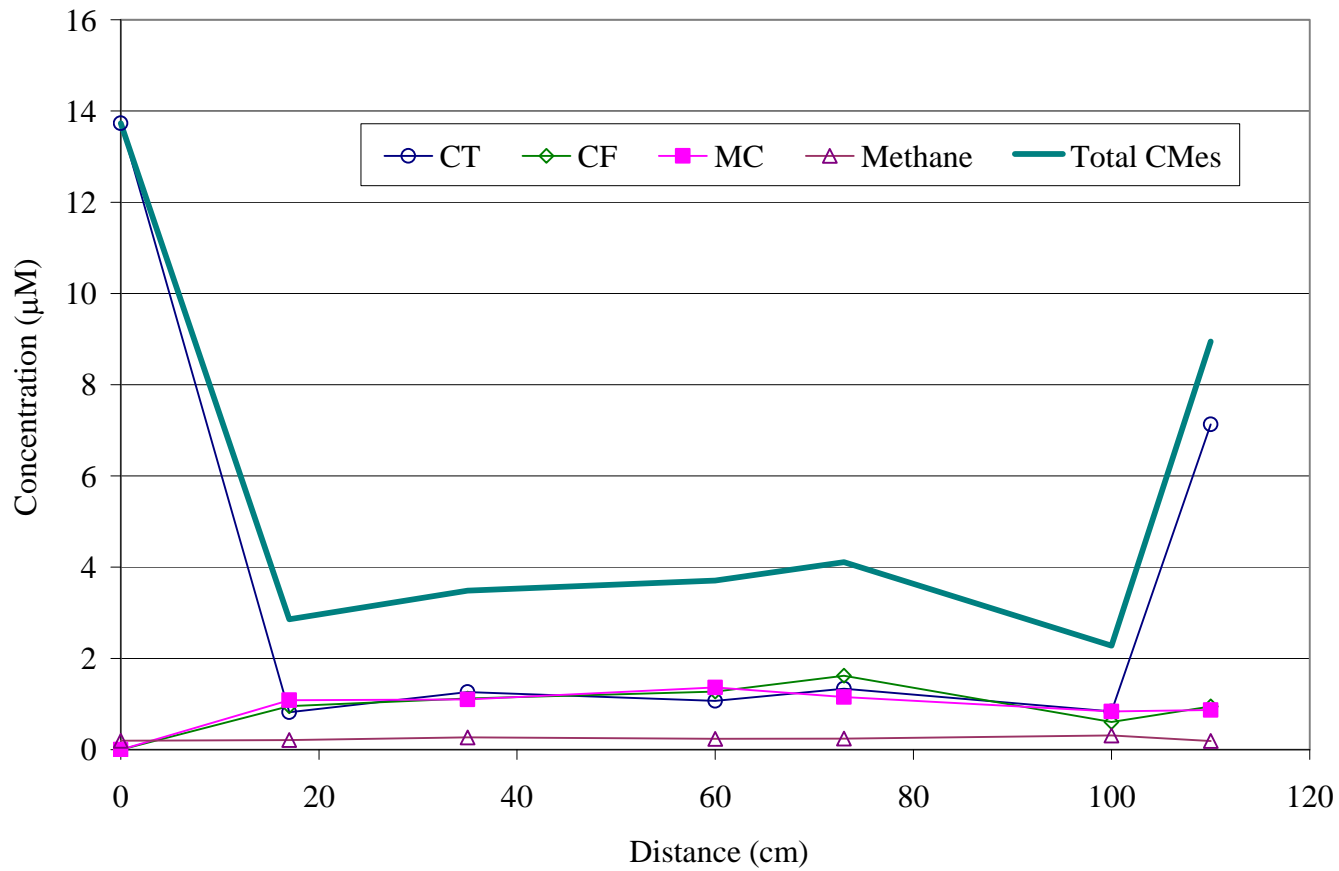


Figure S. 2. 10. Variation of CT and degradation compounds with distance along channel 6 on day 804, 5/24/06. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415 and 445 (well 3).

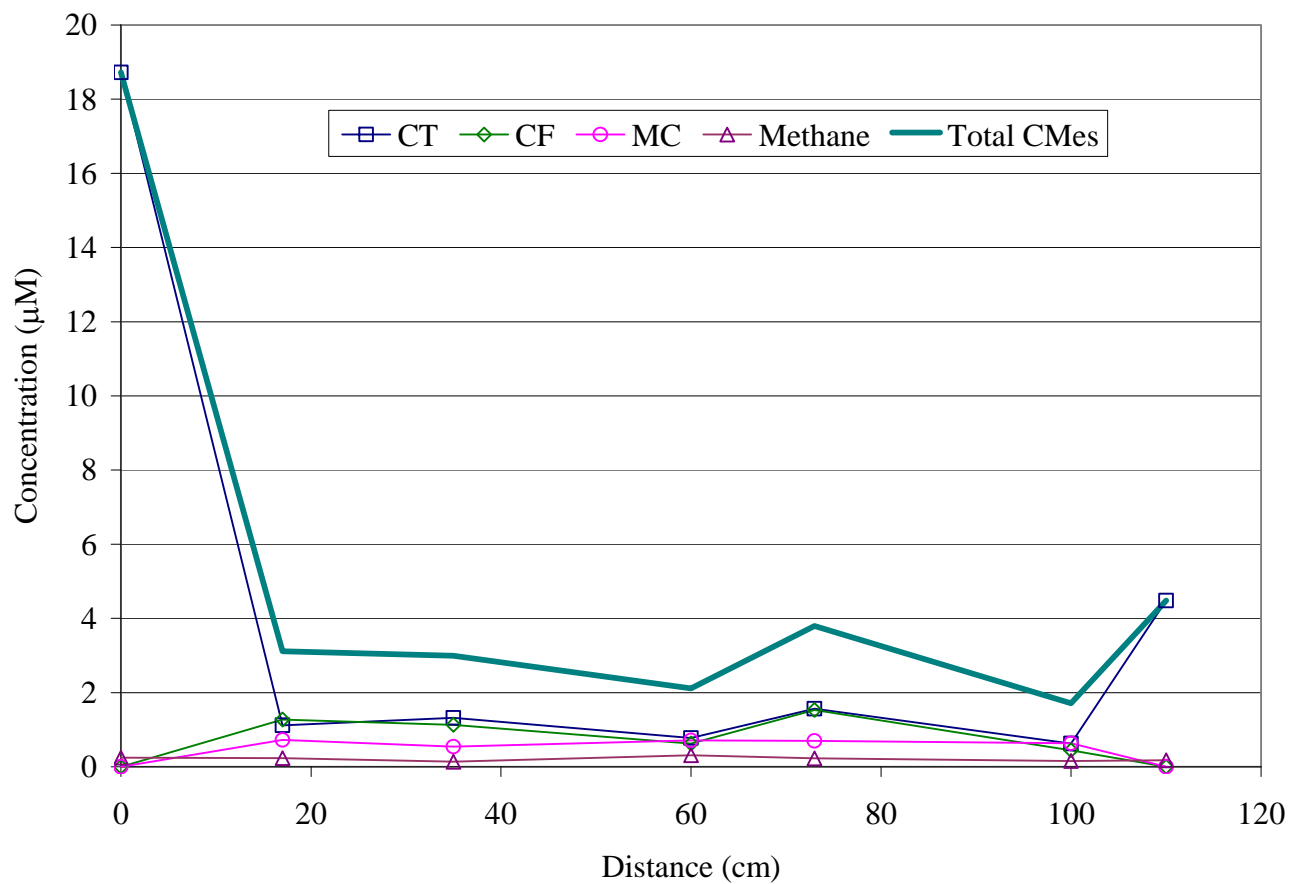


Figure S. 2. 11. Variation of CT and degradation compounds with distance along channel 6 on day 831, 6/21/06. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415 and 445 (well 3).

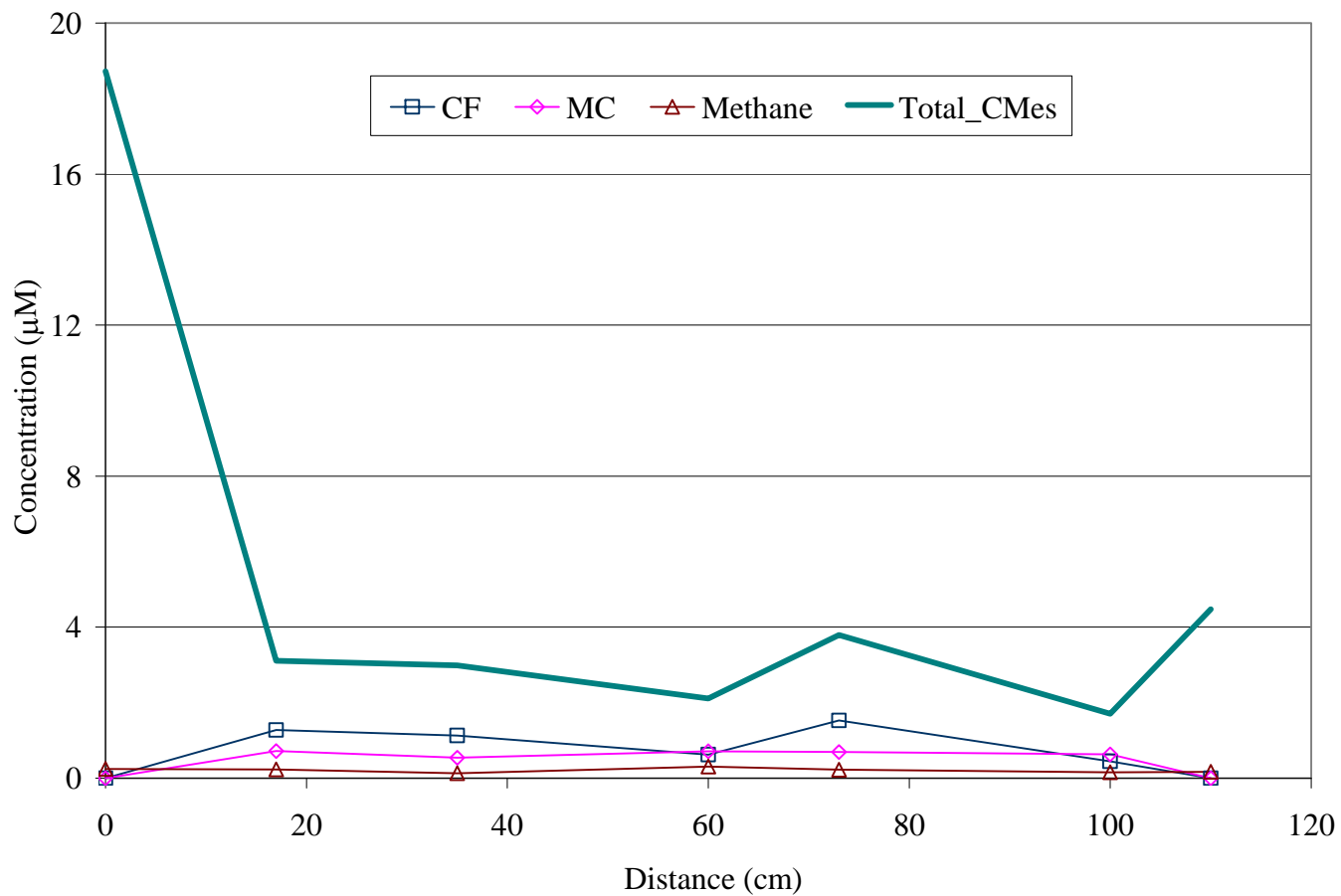


Figure S. 2. 12. Variation of CT and degradation compounds with distance along channel 6 on day 864, 7/24/06. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415, 445 (well 3) and 837.

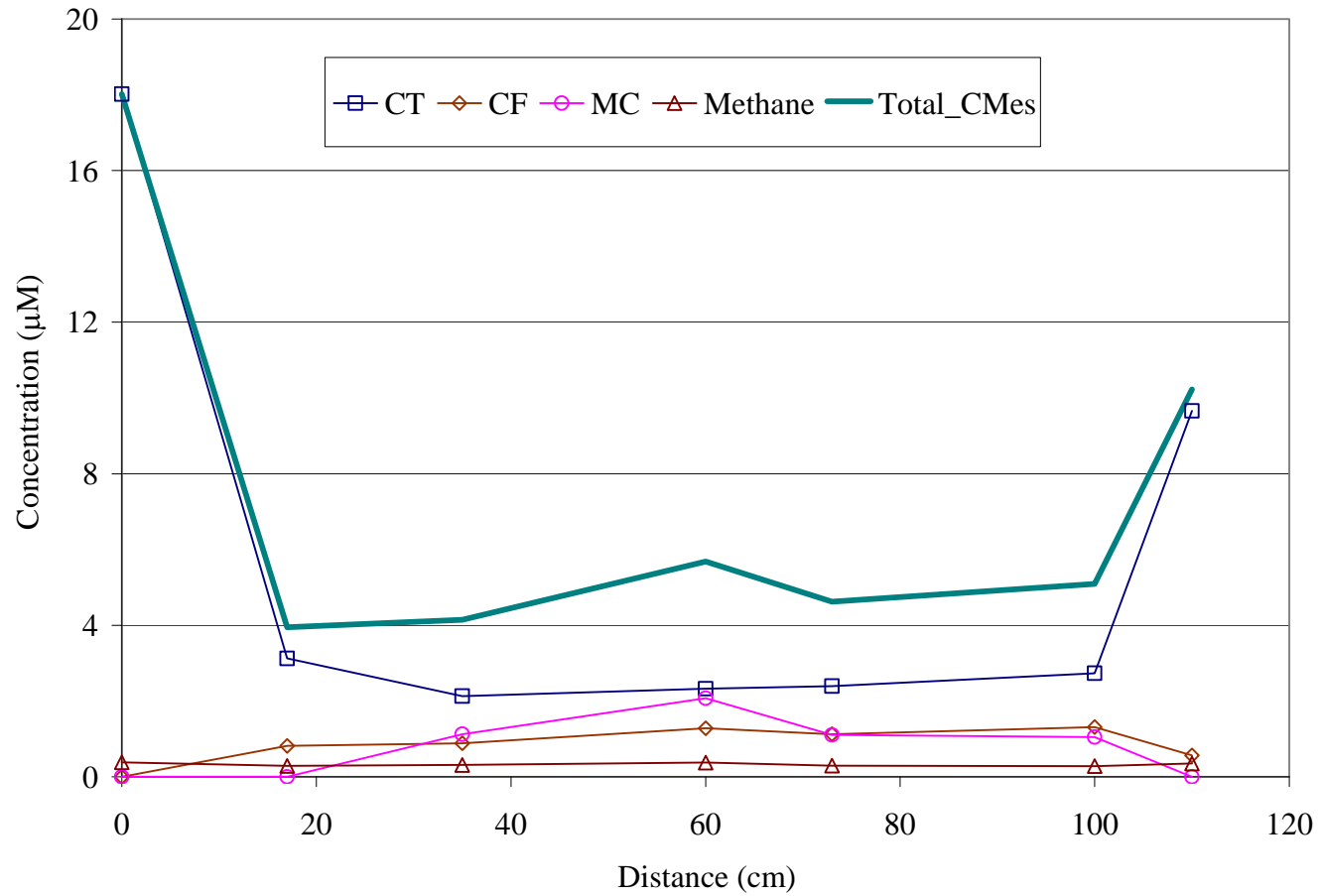


Figure S. 2. 13. Variation of CT and degradation compounds with distance along channel 6 on day 928, 9/26/06. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415, 445 (well 3) and 837.

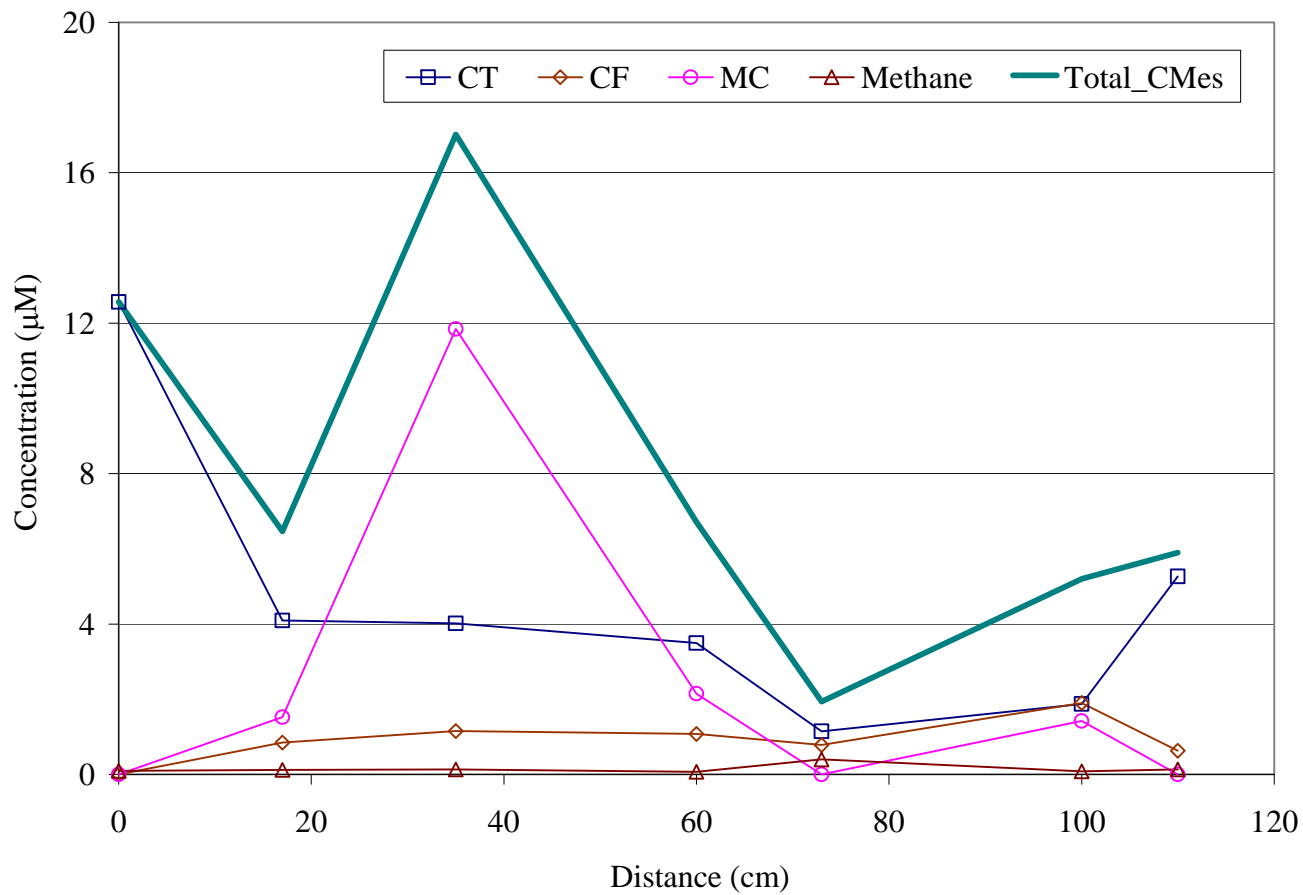


Figure S. 2. 14. Variation of CT and degradation compounds with distance along channel 6 on day 984, 11/23/06. SOME was added on days 203, 236, 266, 299, 328, 359, 387, 415, 445 (well 3), 837 and 957 (well 2).

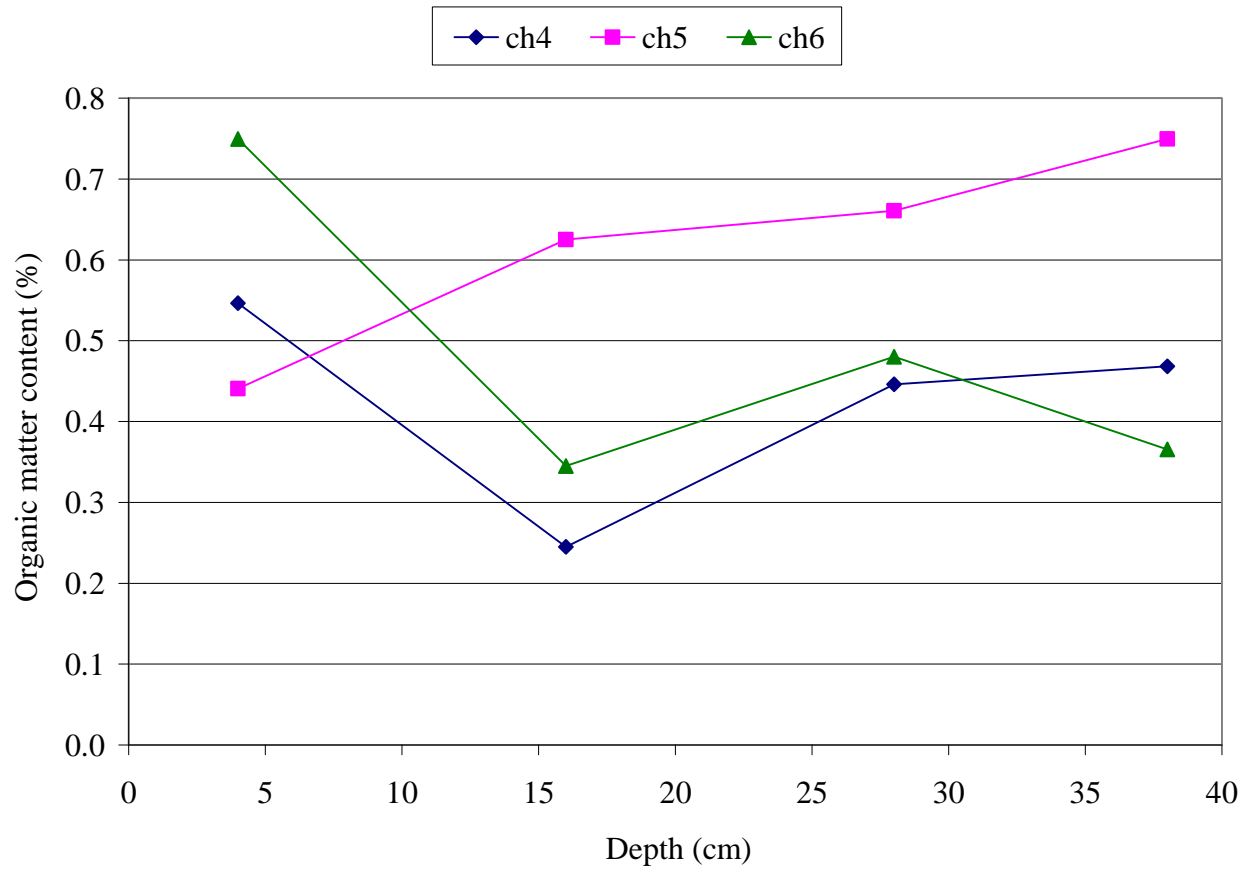


Figure S. 2. 15. Percent organic matter content (foc) in the soil samples of channels 4, 5 and 6; samples were collected on August 10, 2004, day 151. Samples collected at a distance of 52 cm, 57 cm, and 57 cm from inlet for channels 4, 5 and 6, respectively.

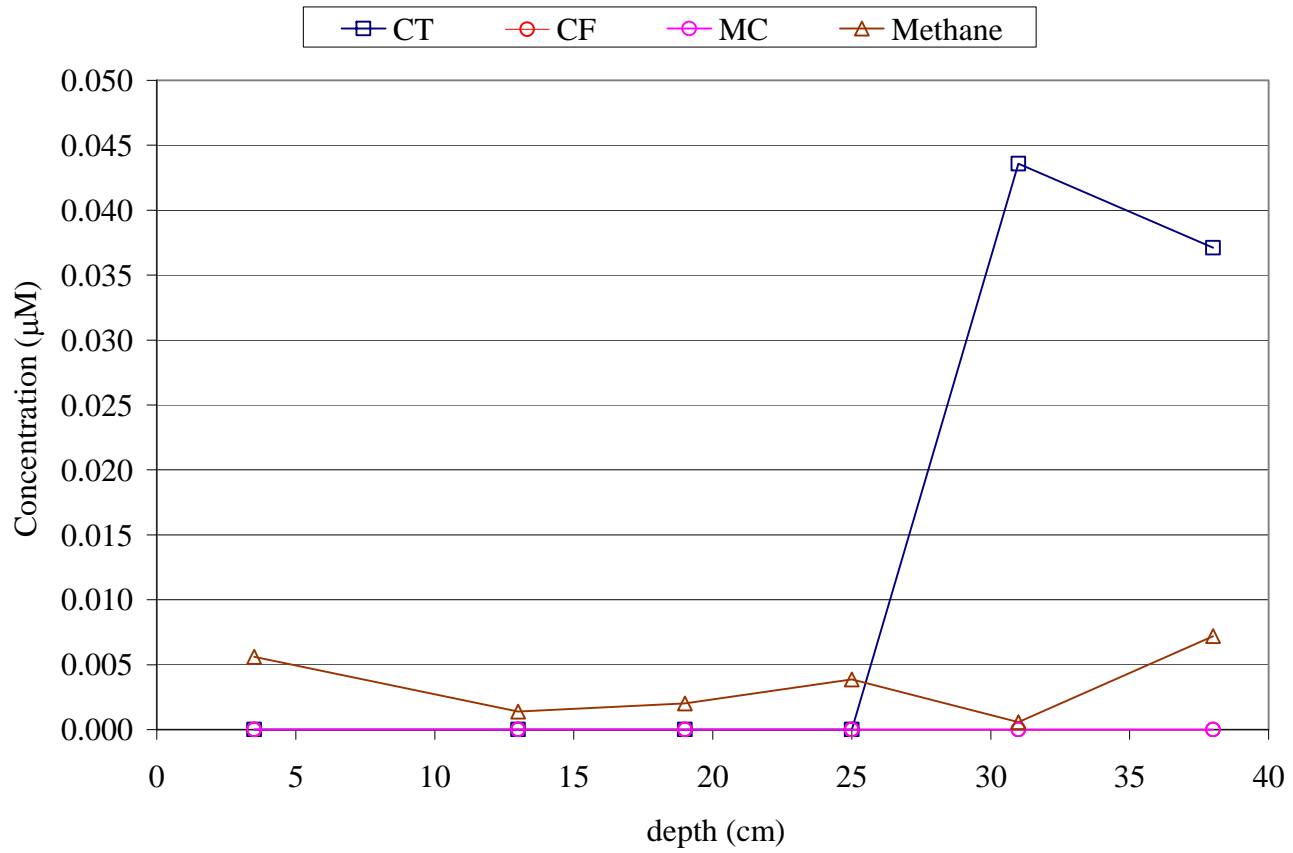


Figure S. 2. 16. CMes and Methane profile, in channel 4 soil, as a function of depth from the surface of the soil; day 995, December 3, 2006. Soil samples were collected at a distance of 26 cm from inlet.

Table S. 2. 1. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 230, 10/28/2004) collected from channels 4, 5 and 6. Soil samples were collected at a distance of 65 cm from inlet.

	Depth (cm)	4	5	6
Mass of aqueous phase (gm)	0-8	0.7064	0.0735	0.6096
	12-20	1.4231	0.4394	1.2054
	24-32	0.3988	0.7083	0.6133
	34-42	0.9172	0.7347	1.4987
	Depth (cm)	4	5	6
Moisture content fraction (w/w)	0-8	0.28	0.03	0.12
	12-20	0.16	0.07	0.15
	24-32	0.20	0.10	0.15
	34-42	0.19	0.13	0.16
	Depth (cm)	4	5	6
Mass of dry soil (gm)	0-8	1.8419	2.8232	4.4483
	12-20	7.2525	5.641	6.9681
	24-32	1.5999	6.0631	3.4057
	34-42	3.7907	4.9917	7.7059

Table S. 2. 2. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 354, 3/1/2005) collected from channels 4, 5 and 6. Soil samples were collected at a distance of 90 cm from inlet.

	Depth (cm)	4	5	6
Mass of aqueous phase (gm)	0-8	0.7275	0.081	0.0822
	12-20	1.1165	1.2209	0.4788
	24-32	0.6711	1.1293	0.7352
	34-42	0.8815	0.8457	0.9188
	Depth (cm)	4	5	6
Moisture content fraction (w/w)	0-8	0.22	0.02	0.03
	12-20	0.14	0.15	0.09
	24-32	0.15	0.16	0.10
	34-42	0.15	0.12	0.12
	Depth (cm)	4	5	6
Mass of dry soil (gm)	0-8	2.5827	3.2126	2.6474
	12-20	6.7259	7.1691	4.9283
	24-32	3.9111	6.0895	6.3768
	34-42	4.8309	6.4448	6.8822

Table S. 2. 3. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 812, 6/1/2006) collected from channels 4, 5 and 6. Soil samples were collected at a distance of 37, 12 and 12 cm from inlet for channels 4, 5 and 6 respectively.

	Depth (cm)	4	5	6
Mass of aqueous phase (gm)	0-8	0.57	0.233	0.11
	12-20	0.952	0.255	0.8
	24-32	0.46	0.346	0.994
	34-42	1.042	1.021	0.485
	Depth (cm)	4	5	6
Moisture content fraction (w/w)	0-8	0.17	0.07	0.04
	12-20	0.13	0.09	0.12
	24-32	0.10	0.08	0.14
	34-42	0.15	0.16	0.14
	Depth (cm)	4	5	6
Mass of dry soil (gm)	0-8	2.754	2.922	2.804
	12-20	6.156	2.494	5.629
	24-32	3.931	3.741	6.008
	34-42	6.074	5.319	2.945

Table S. 2. 4. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 995, 12/3/2006) collected from channels 4, 5 and 6. Soil samples were collected at a distance of 26 cm from inlet.

	Depth (cm)	4	5	6
Mass of aqueous phase (gm)	0-7	0.5285	0.1186	0.1709
	10-16	1.1013	0.3679	0.272
	16-22	0.849	0.7978	0.7968
	22-28	0.5277	0.7804	0.4234
	28-34	1.0321	0.4629	0.2009
	35-41	0.2405	1.5023	1.0556
	Depth (cm)	4	5	6
Moisture content fraction (w/w)	0-7	0.19	0.03	0.05
	10-16	0.15	0.07	0.07
	16-22	0.14	0.12	0.13
	22-28	0.15	0.13	0.13
	28-34	0.15	0.15	0.17
	35-41	0.14	0.16	0.15
	Depth (cm)	4	5	6
Mass of dry soil (gm)	0-7	2.2514	4.4472	3.4095
	10-16	6.1134	4.6025	3.5287
	16-22	5.0181	5.6186	5.5293
	22-28	2.9863	5.2492	2.9066
	28-34	5.9381	2.5242	0.9575
	35-41	1.4194	7.6357	6.1253

Supplement to Chapter 3

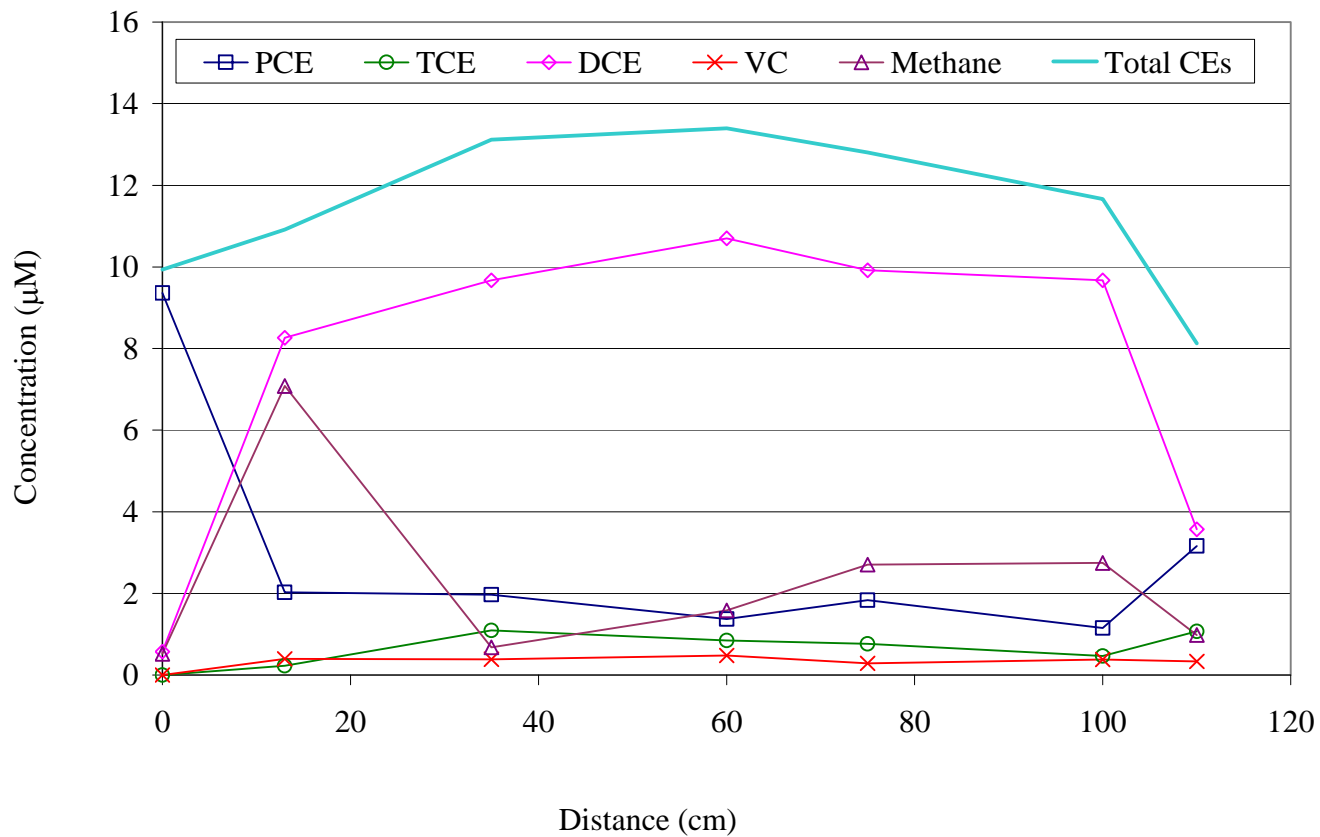


Figure S. 3. 1. Variation of PCE and degradation compounds with distance along channel 1 on day 395, 4/11/05. Soy Oil Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, and 359.

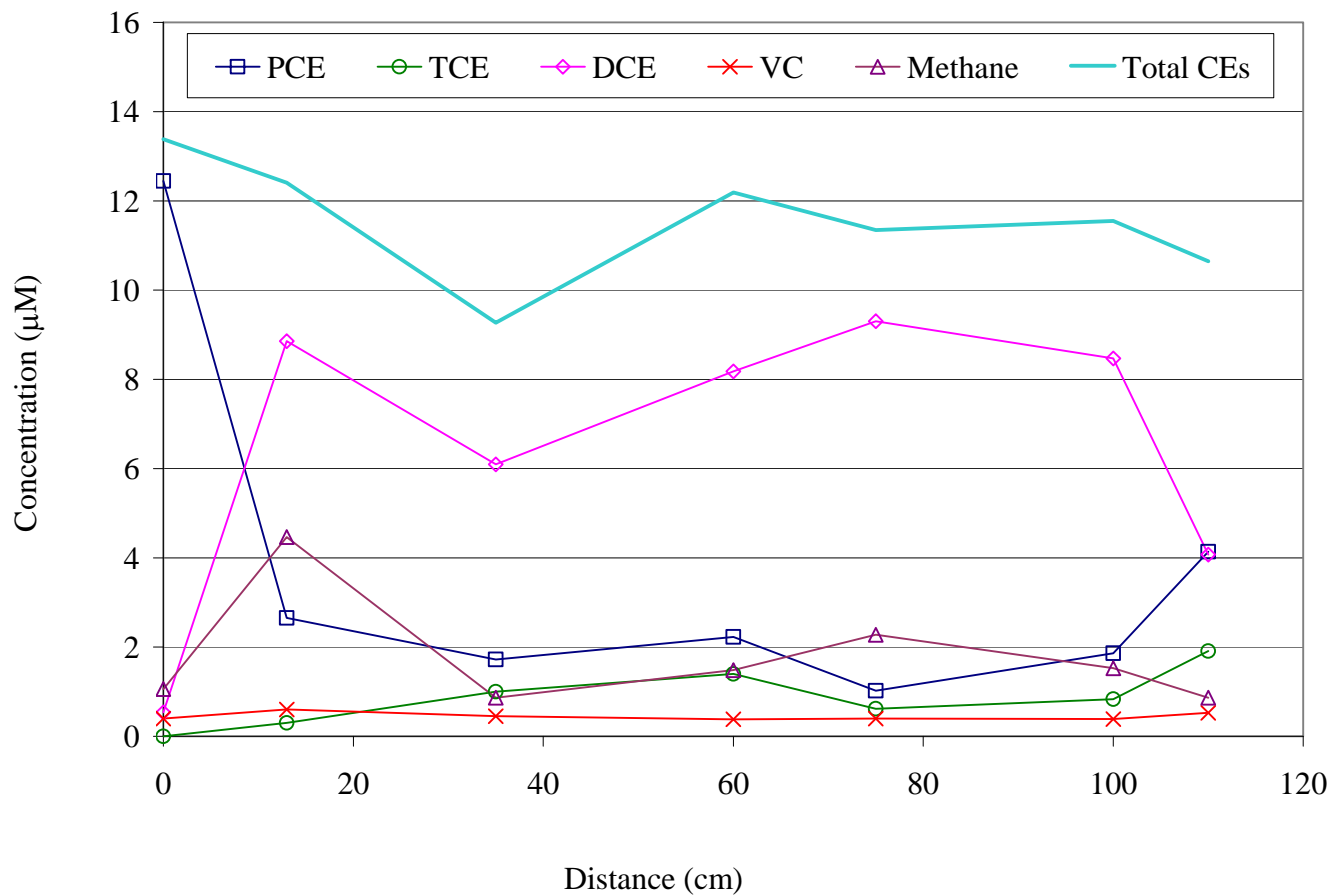


Figure S. 3. 2. Variation of PCE and degradation compounds with distance along channel 1 on day 409, 4/25/05. Soy Oil Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, 359, 387, 415, and 417 (well 3).

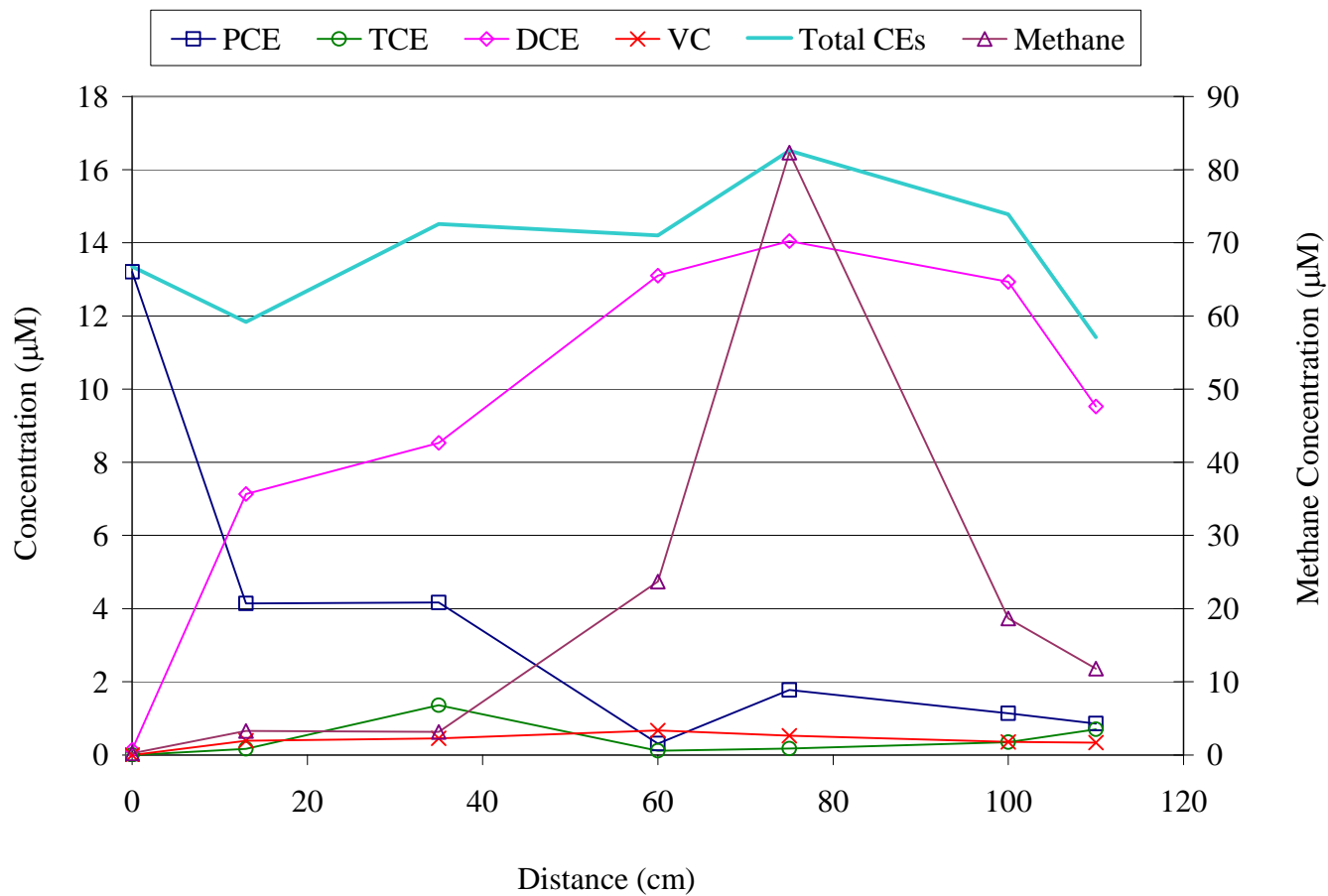


Figure S. 3. 3. Variation of PCE and degradation compounds with distance along channel 1 on day 555, 9/18/05. Methane concentrations are on right-hand (secondary) y-axis. Soy Oil Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, 359, 387, 415, and 417 (well 3).

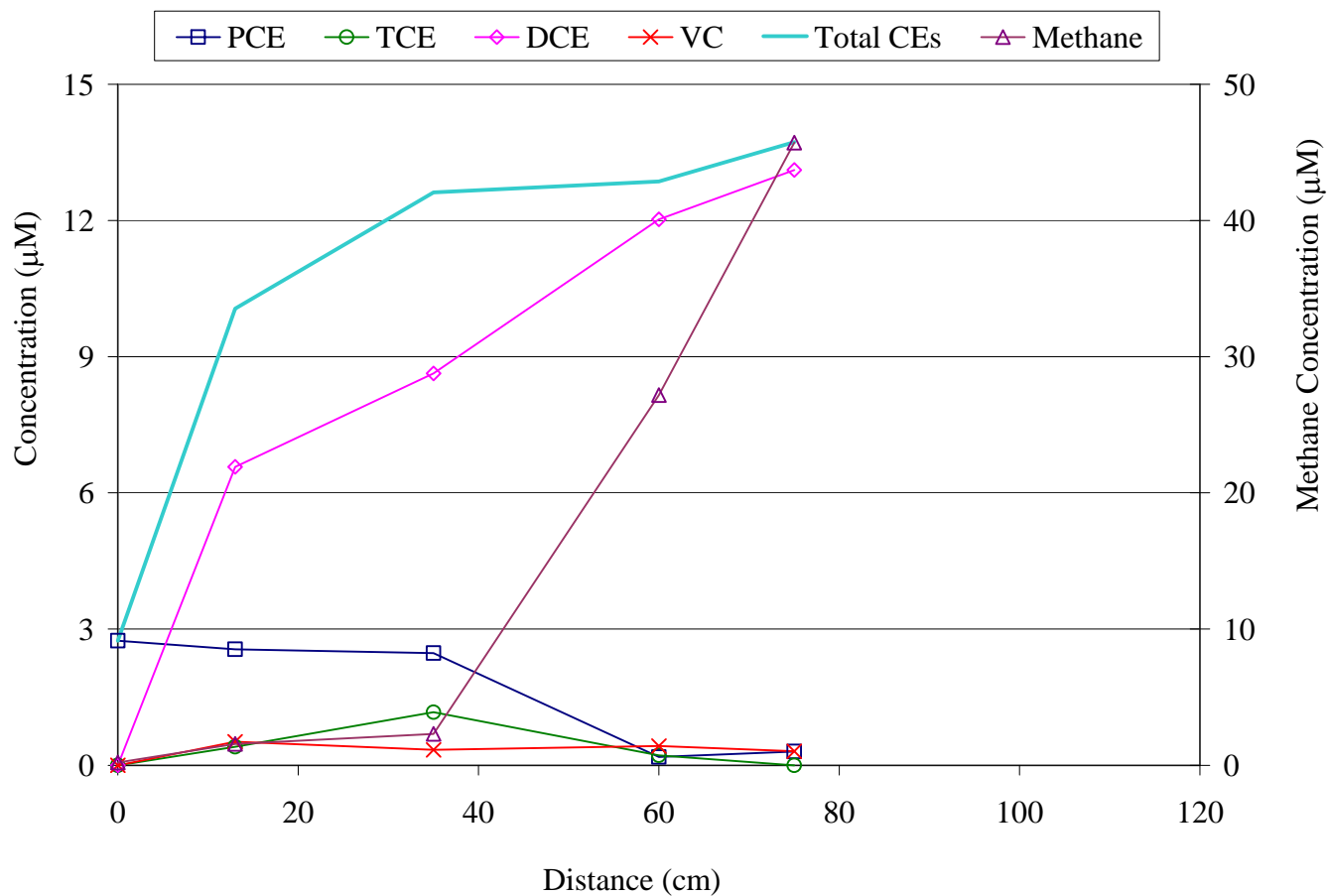


Figure S. 3. 4. Variation of PCE and degradation compounds with distance along channel 1 on day 590, 10/23/05. Methane concentrations are on right-hand (secondary) y-axis. Soy Oil Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, 359, 387, 415, and 417 (well 3).

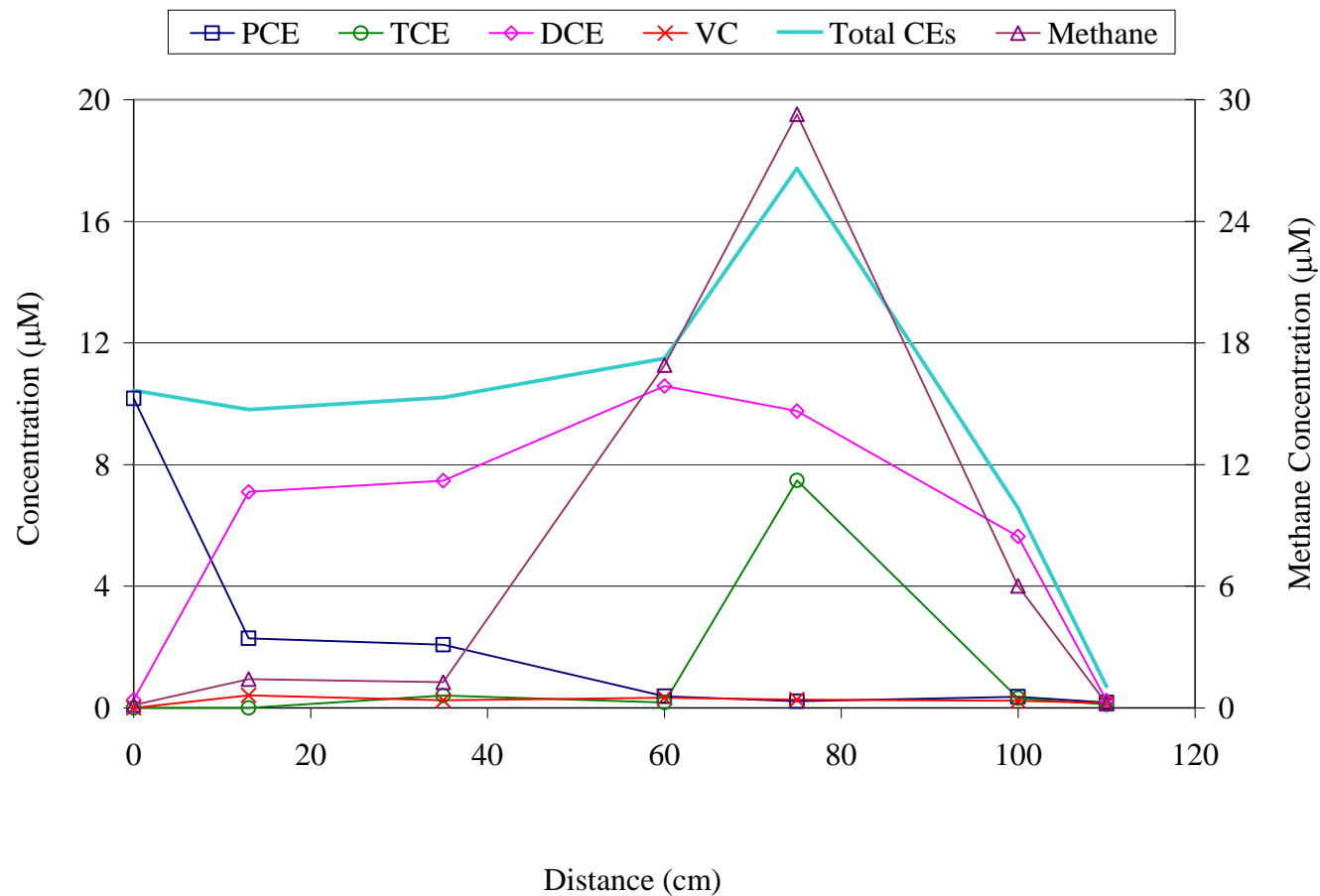


Figure S. 3. 5. Variation of PCE and degradation compounds with distance along channel 1 on day 686, 1/24/06. Methane concentrations are on right-hand (secondary) y-axis. KB-1 was injected on day 605, 11/7/05. Soy Oil Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, 359, 387, 415, 417 (well 3) and 594.

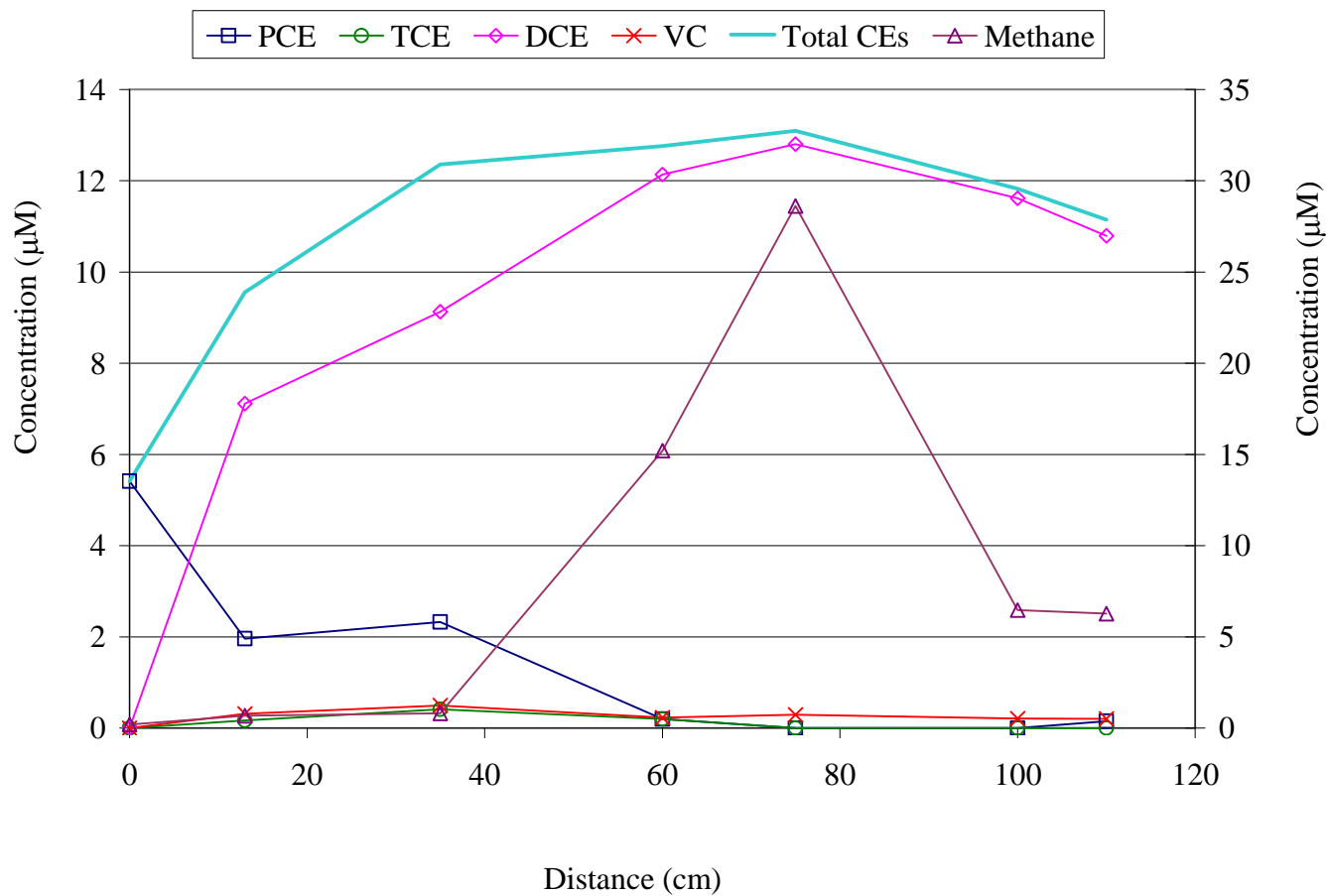


Figure S. 3. 6. Variation of PCE and degradation compounds with distance along channel 1 on day 741, 3/22/06. Methane concentrations are on right-hand (secondary) y-axis. KB-1 was injected on day 605, 11/7/05. Soy Oil Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, 359, 387, 415, 417 (well 3) and 594.

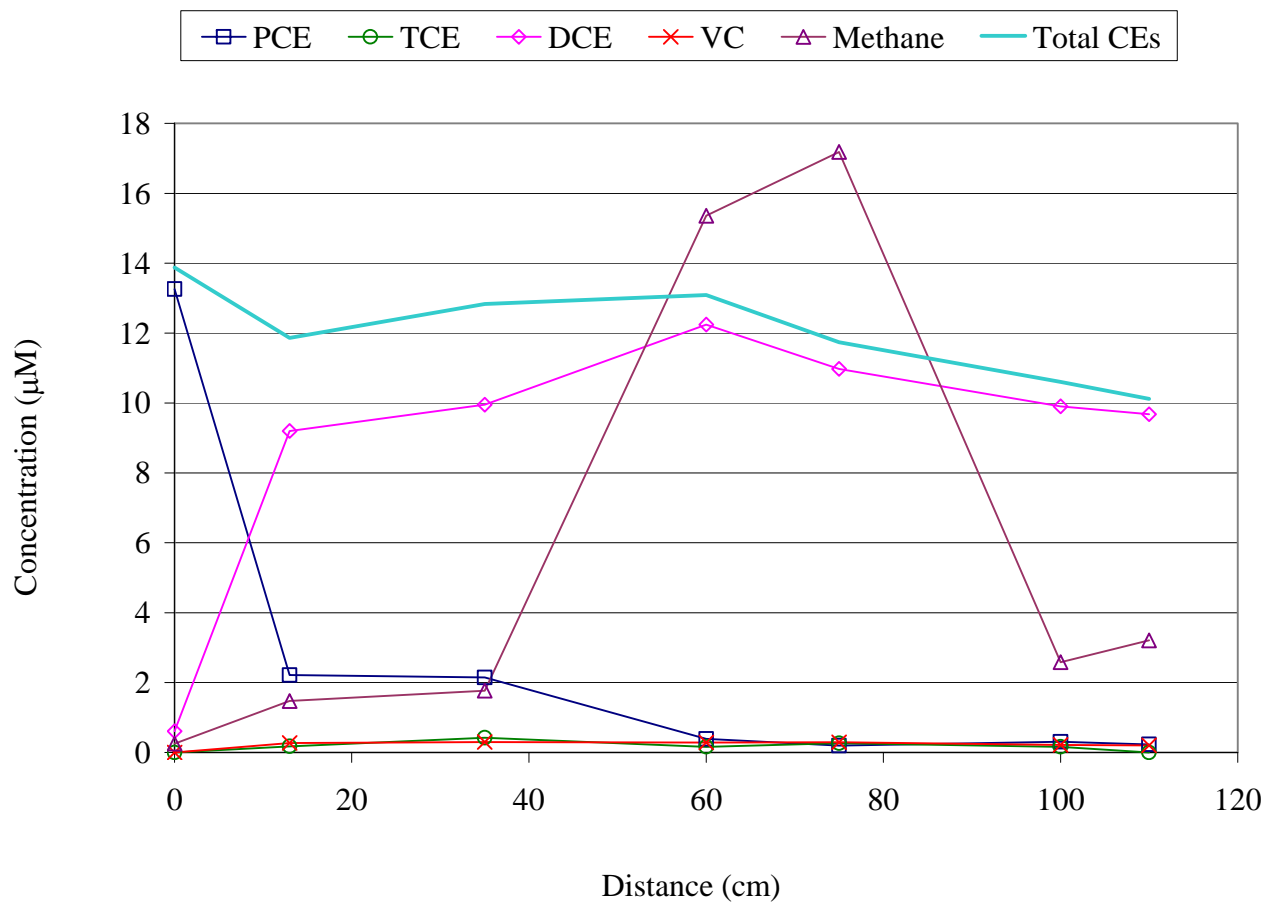


Figure S. 3. 7. Variation of PCE and degradation compounds with distance along channel 1 on day 775, 4/25/06. KB-1 was injected on day 775, 4/25/06. Soy Oil Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, 359, 387, 415, 417 (well 3) and 594.

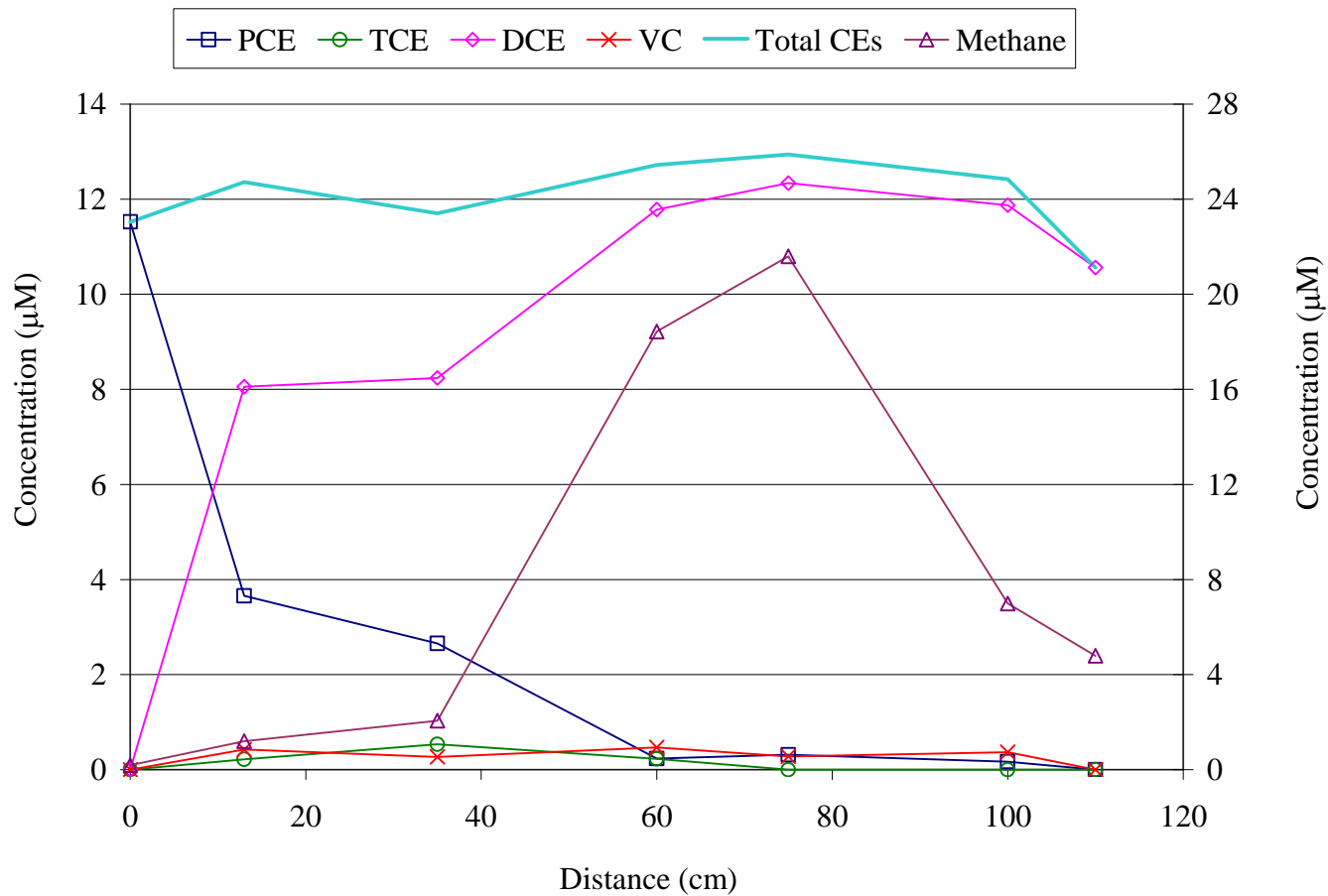


Figure S. 3. 8. Variation of PCE and degradation compounds with distance along channel 1 on day 804, 5/24/06. Methane concentrations are on right-hand (secondary) y-axis. KB-1 was injected on day 605, 11/7/05. Soy Oil Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, 359, 387, 415, 417 (well 3) and 594.

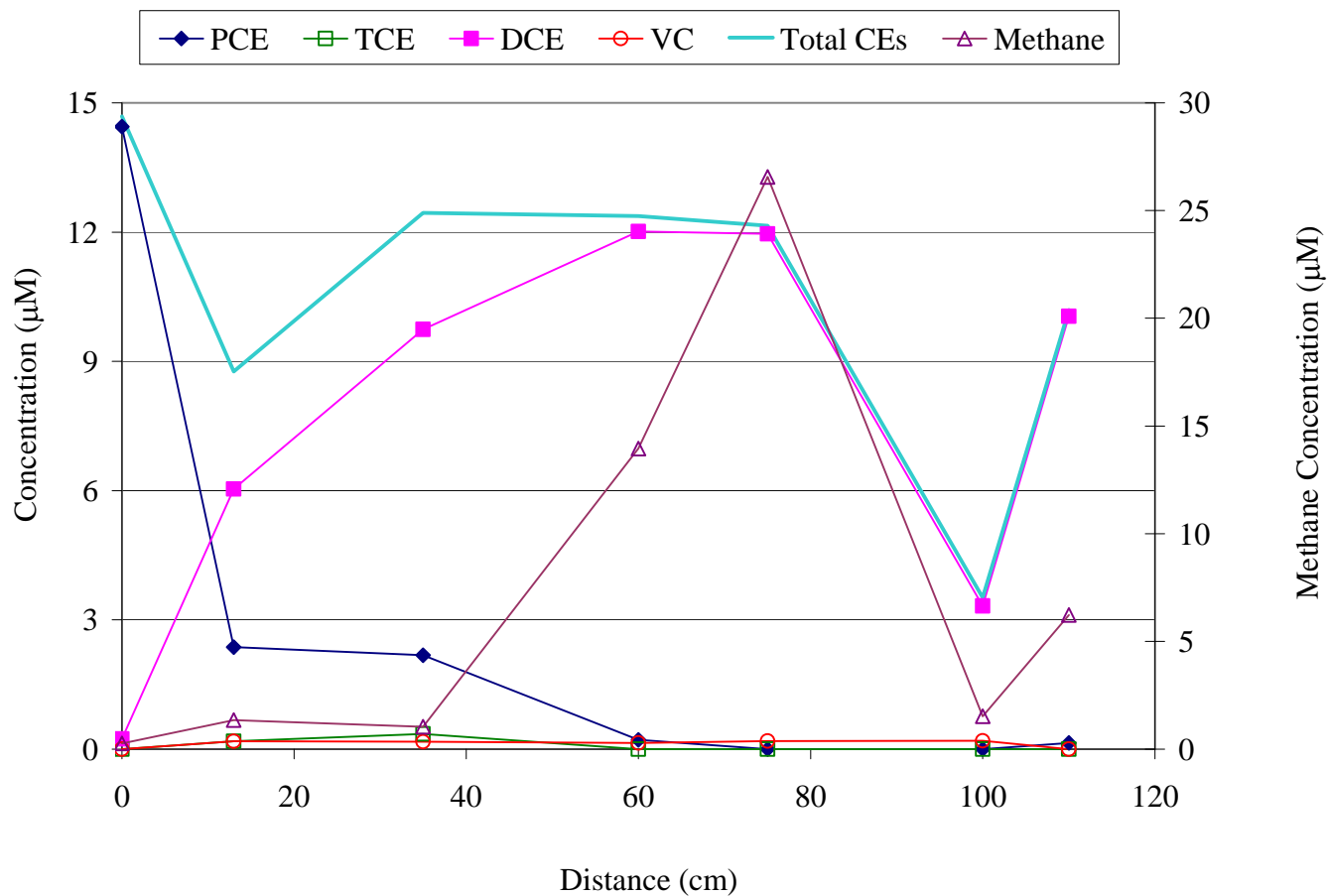


Figure S. 3. 9. Variation of PCE and degradation compounds with distance along channel 1 on day 831, 6/21/06. Methane concentrations are on right-hand (secondary) y-axis. KB-1 was injected on day 605, 11/7/05 and day 811, 6/1/06. Soy Oil Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, 359, 387, 415, 417 (well 3) and 594.

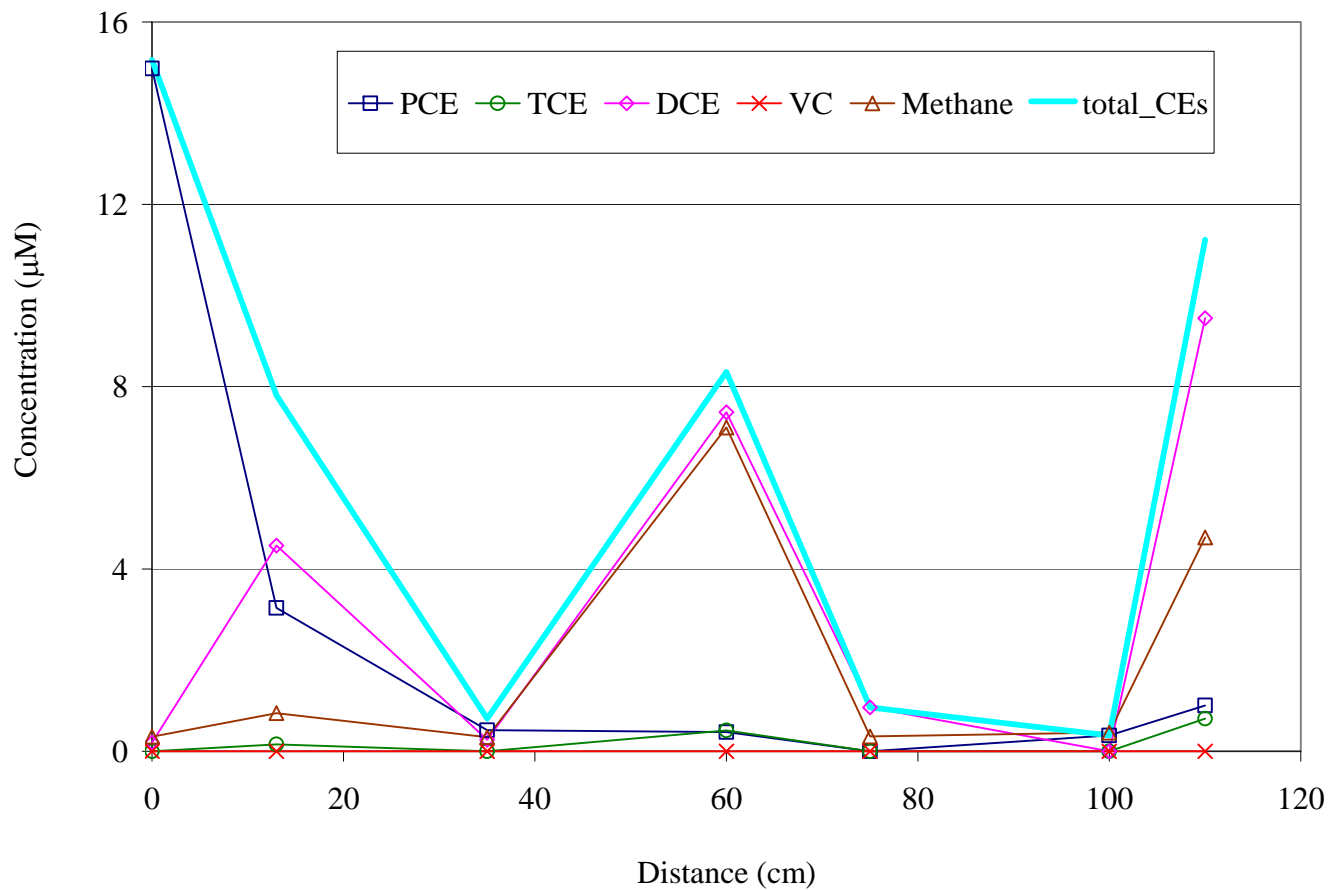


Figure S. 3. 10. Variation of PCE and degradation compounds with distance along channel 1 on day 928, 9/26/06. KB-1 was injected on day 605, 11/7/05 and day 811, 6/1/06. Soy Oil Methyl Esters (SOME) were added on days 203, 236, 266, 299, 328, 359, 387, 415, 417 (well 3) and 594.

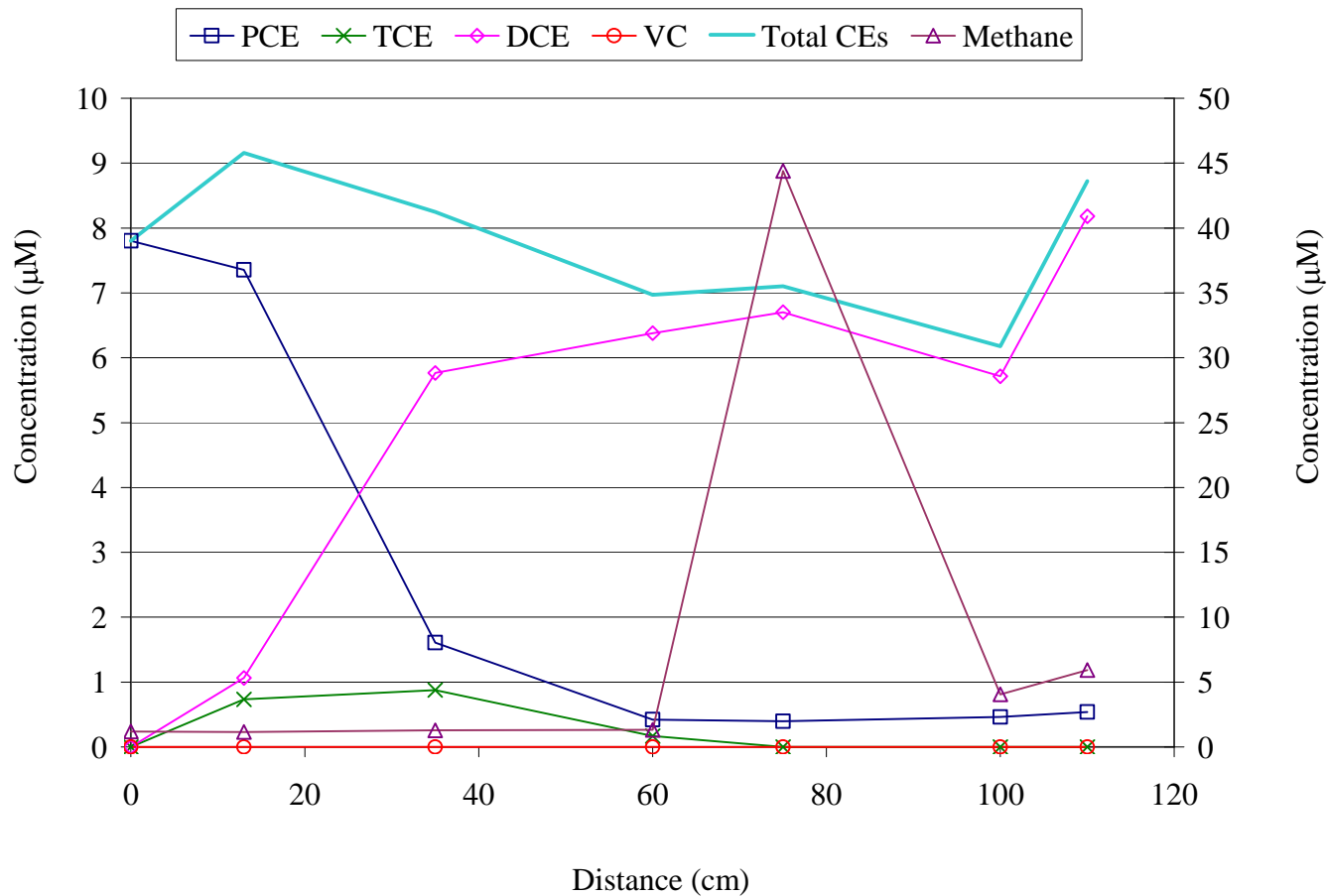


Figure S. 3. 11. Variation of PCE and degradation compounds with distance along channel 2 on day 395, 4/11/05. Methane concentrations are on right-hand (secondary) y-axis. Glucose solution was added on days 110, 151, 173, 203 and 236. Corn starch was added on days 266, 299 and 328.

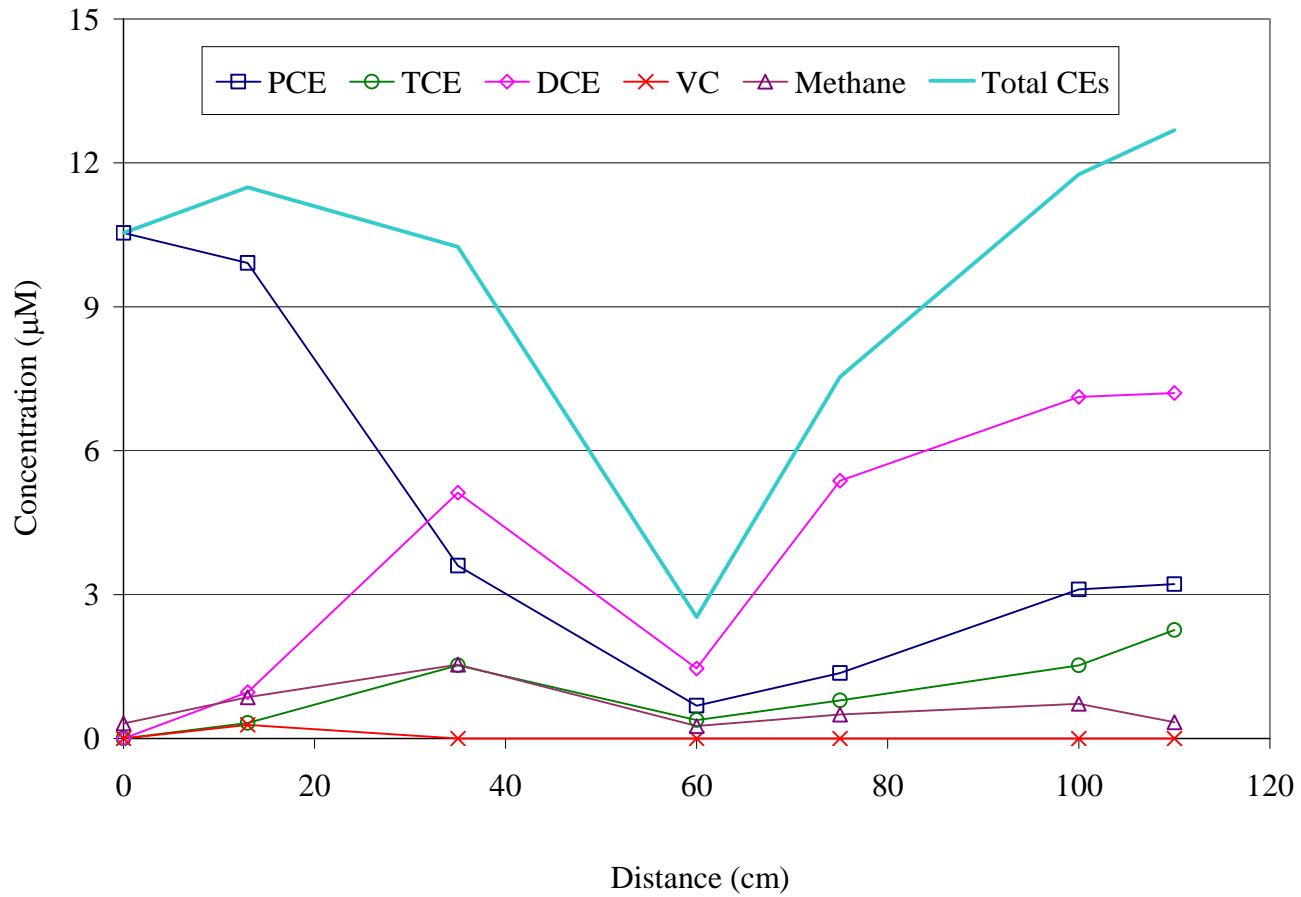


Figure S. 3. 12. Variation of PCE and degradation compounds with distance along channel 2 on day 456, 6/11/05; Glucose solution was added on days 110, 151, 173, 203 and 236. Corn starch was on days 266, 299 and 328.

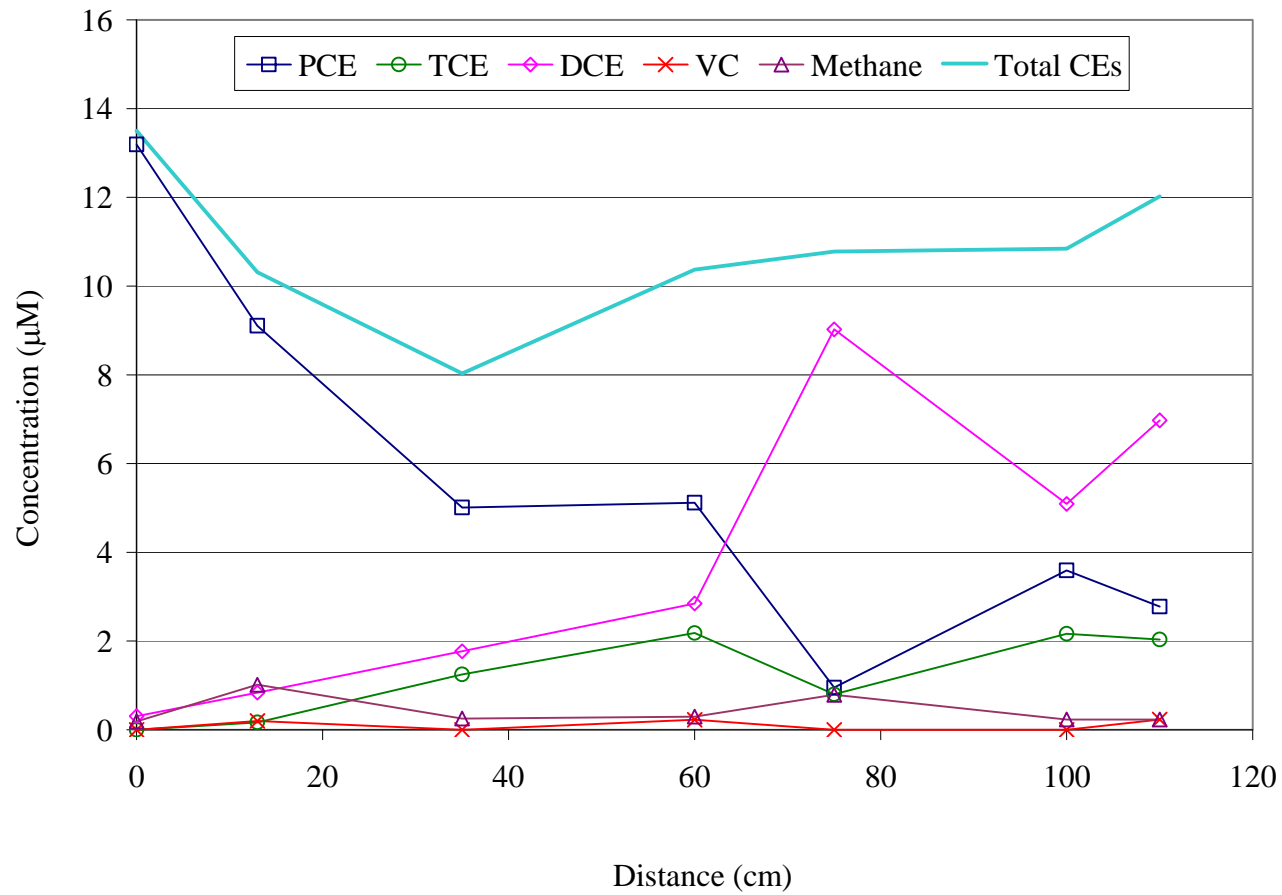


Figure S. 3. 13. Variation of PCE and degradation compounds with distance along channel 2 on day 496, 7/21/05; Glucose solution was added on days 110, 151, 173, 203 and 236. Corn starch was on days 266, 299 and 328.

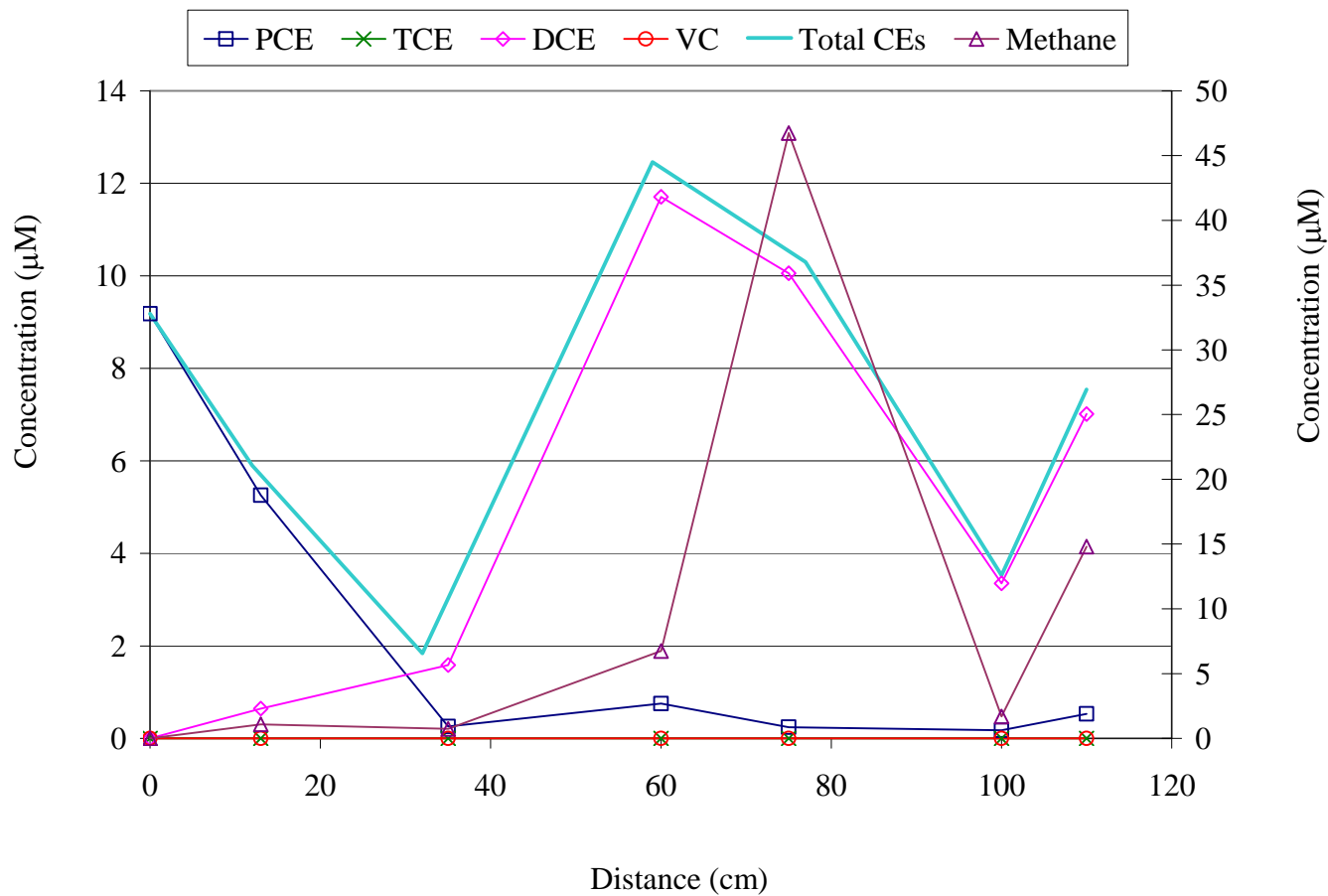


Figure S. 3. 14. Variation of PCE and degradation compounds with distance along channel 2 on day 590, 10/23/05; Methane concentrations are on right-hand (secondary) y-axis. Glucose solution was added on days 110, 151, 173, 203, 236, 266 and 299. Corn starch was on days 266, 299, 328 and 522.

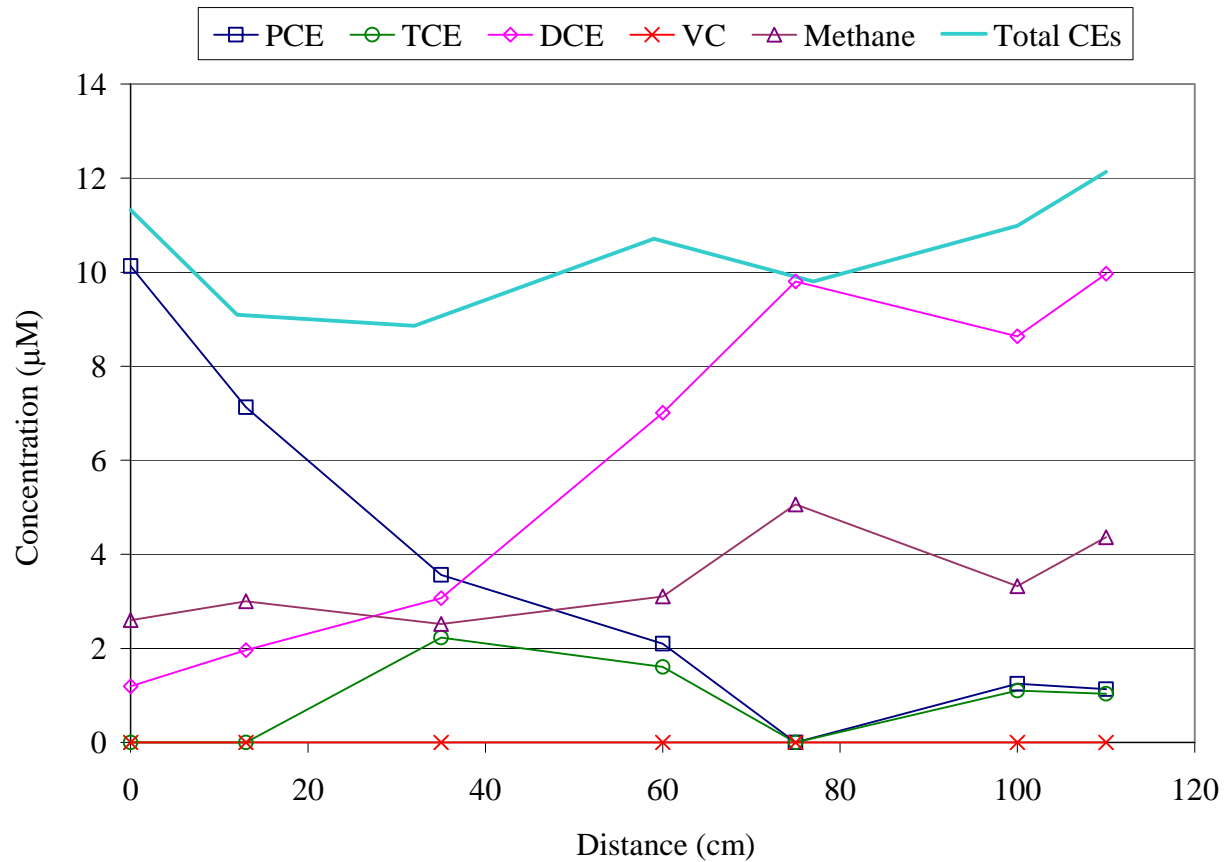


Figure S. 3. 15. Variation of PCE and degradation compounds with distance along channel 2 on day 644, 12/15/05. KB-1 was injected on day 591, 10/24/05; Glucose solution was added on days 110, 151, 173, 203, 236, and 564. Corn starch was added on days 266, 299, 328 and 522.

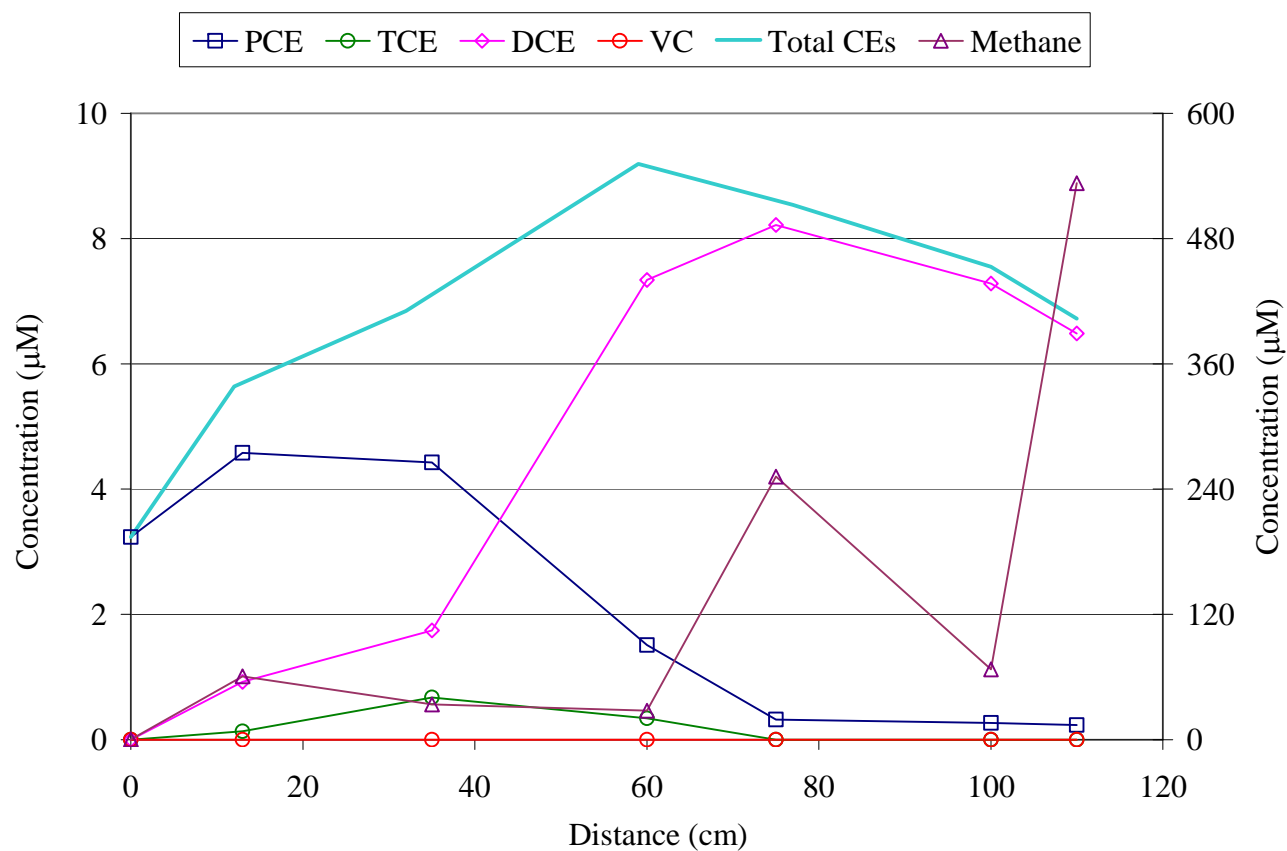


Figure S. 3. 16. Variation of PCE and degradation compounds with distance along channel 2 on day 686, 1/24/06. Methane concentrations are on right-hand (secondary) y-axis. KB-1 was injected on day 591, 10/24/05; Glucose solution was added on days 110, 151, 173, 203, 236, 564 and 676. Corn starch was added on days 266, 299, 328 and 522.

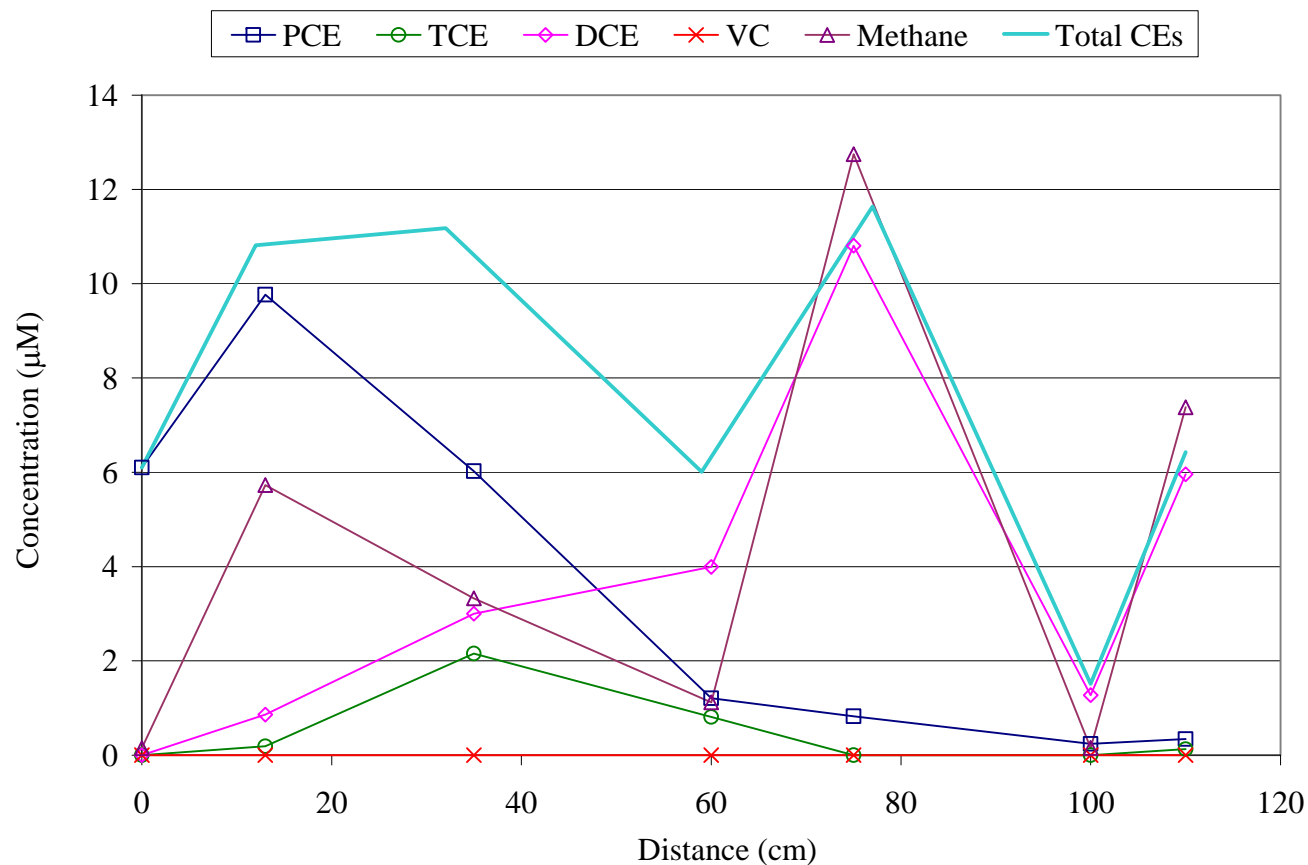


Figure S. 3. 17. Variation of PCE and degradation compounds with distance along channel 2 on day 712, 2/21/06. KB-1 was injected on day 591, 10/24/05; Glucose solution was added on days 110, 151, 173, 203, 236, 564 and 676. Corn starch was added on days 266, 299, 328 and 522.

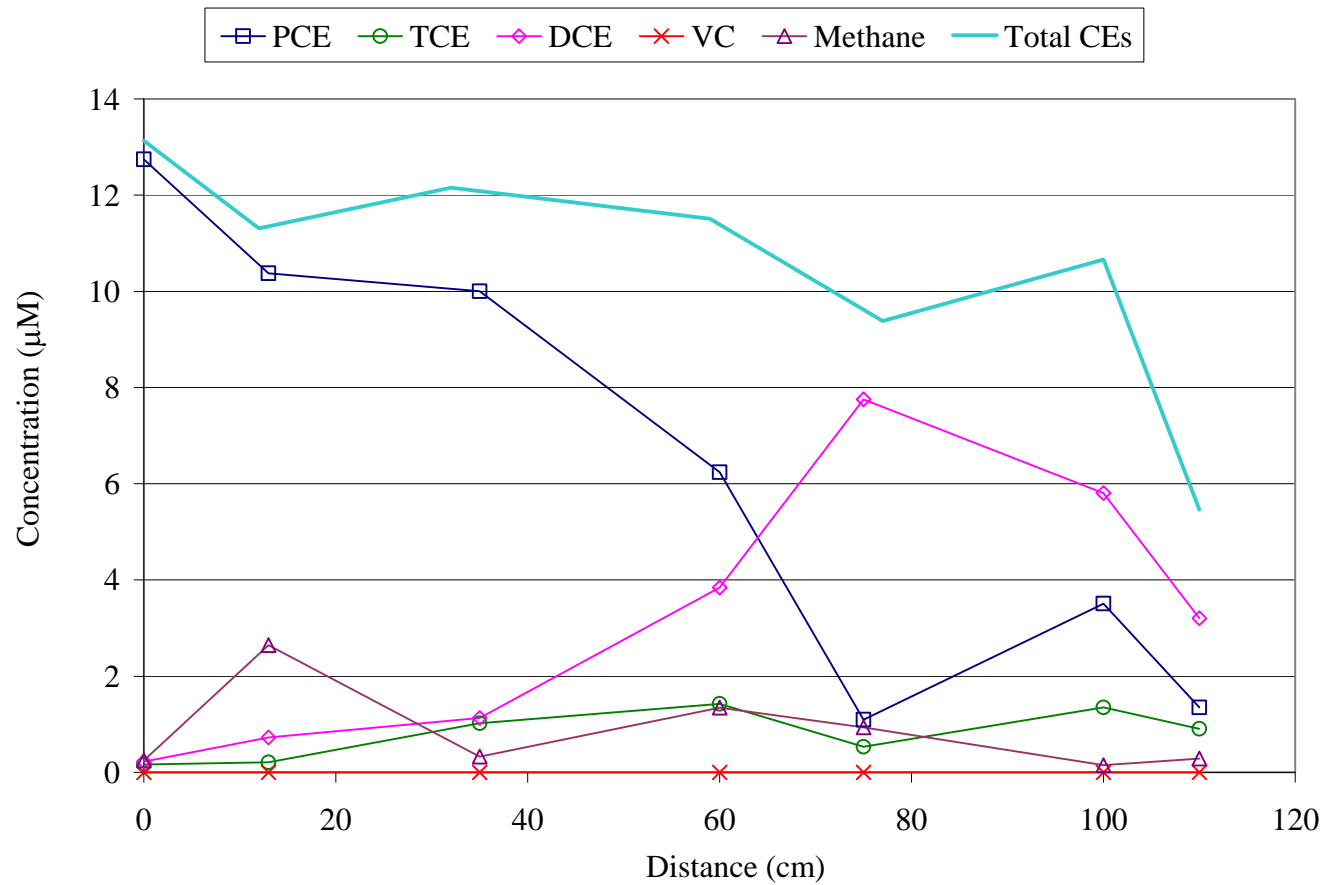


Figure S. 3. 18. Variation of PCE and degradation compounds with distance along channel 2 on day 775, 4/25/06. KB-1 was injected on day 591, 10/24/05; Glucose solution was added on days 110, 151, 173, 203, 564 and 676. Corn starch was added on days 266, 299, 328 and 522.

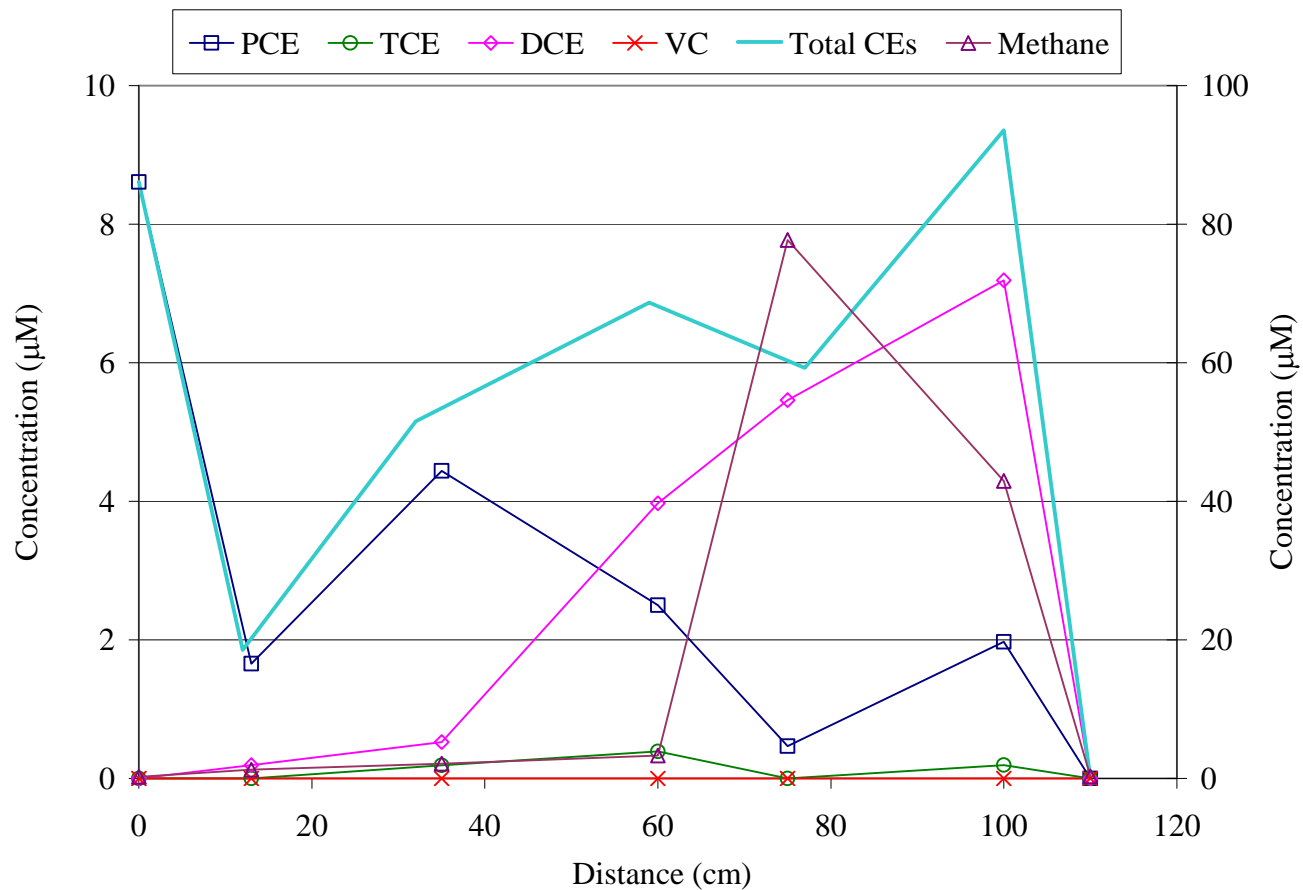


Figure S. 3. 19. Variation of PCE and degradation compounds with distance along channel 2 on day 804, 5/24/06. Methane concentrations are on right hand (secondary) y-axis. KB-1 was injected on day 591, 10/24/05; Glucose solution was added on days 110, 151, 173, 203, 299, 564, 676 and 800. Corn starch was added on days 266, 299, 328 and 522.

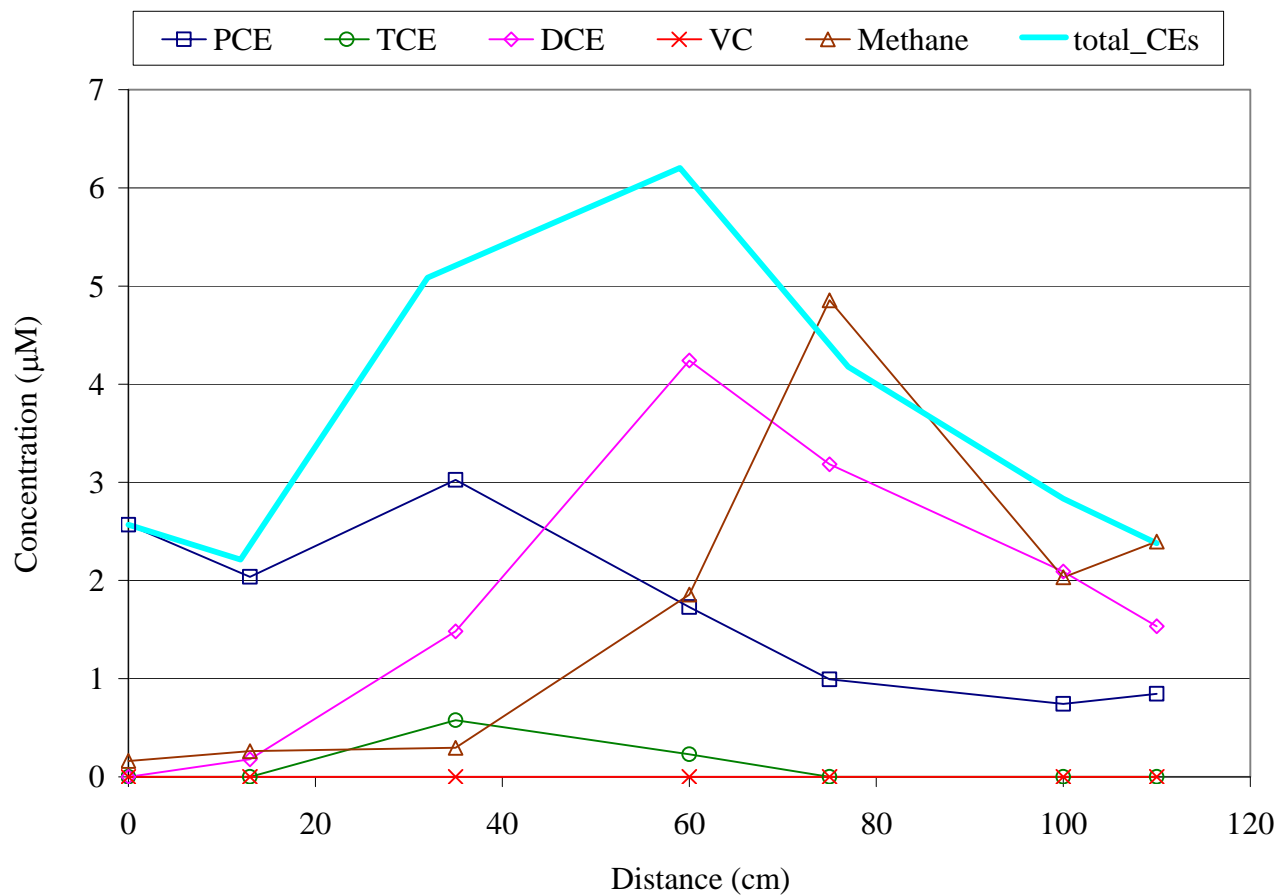


Figure S. 3. 20. Variation of PCE and degradation compounds with distance along channel 2 on day 864, 7/24/06. KB-1 injected on 10/24/05 (day 591) & 5/31/06 (day 810); Glucose solution was added on days 110, 151, 173, 203, 236, 564, 676 and 800. Corn starch was added on days 266, 299, 328 and 522

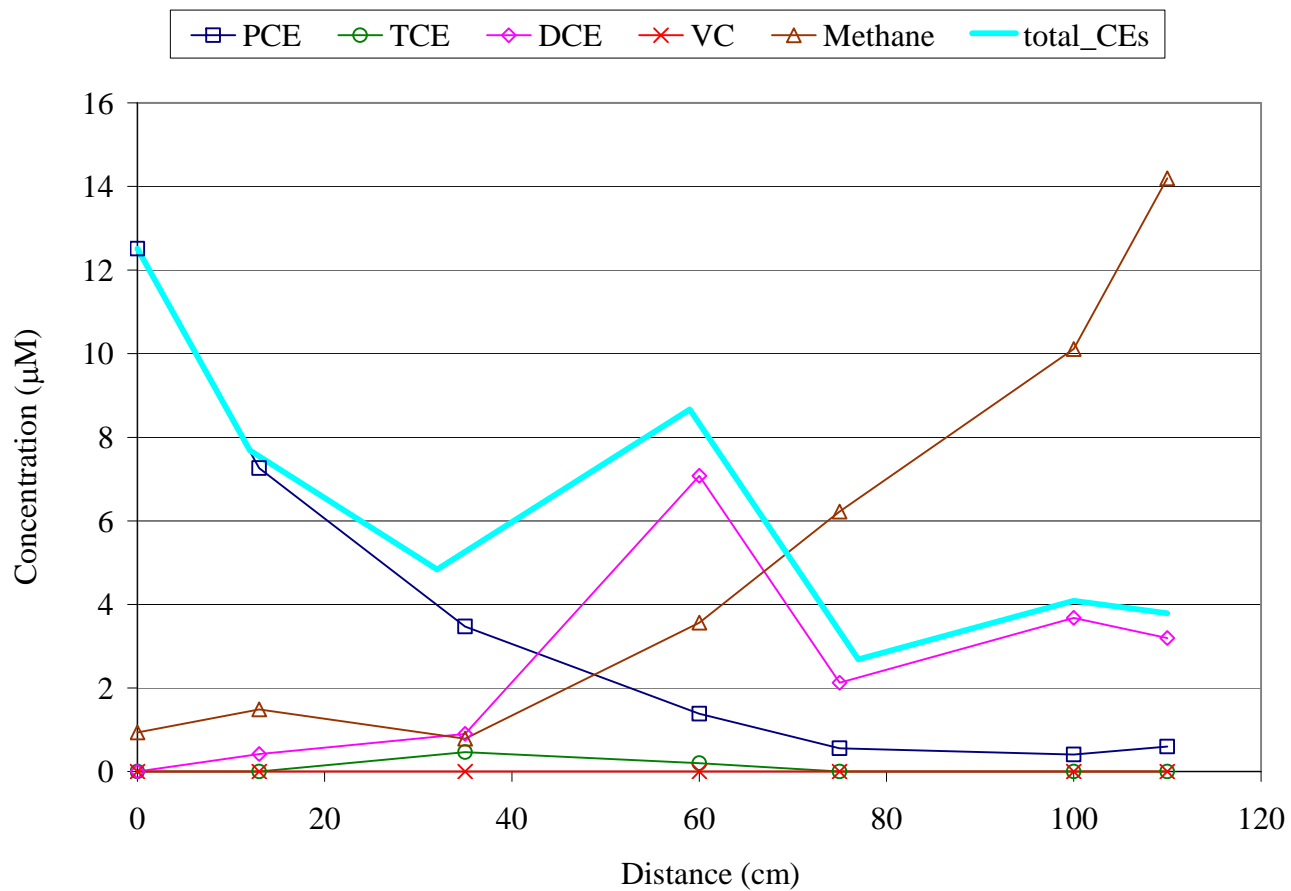


Figure S. 3. 21. Variation of PCE and degradation compounds with distance along channel 2 on day 928, 9/26/06. KB-1 was injected on 10/24/05 (day 591) & 5/31/06 (day 810). Glucose solution was added on days 110, 151, 173, 203, 236, 564, 676, 800 and 901. Corn starch was added on days 266, 299, 328 and 522.

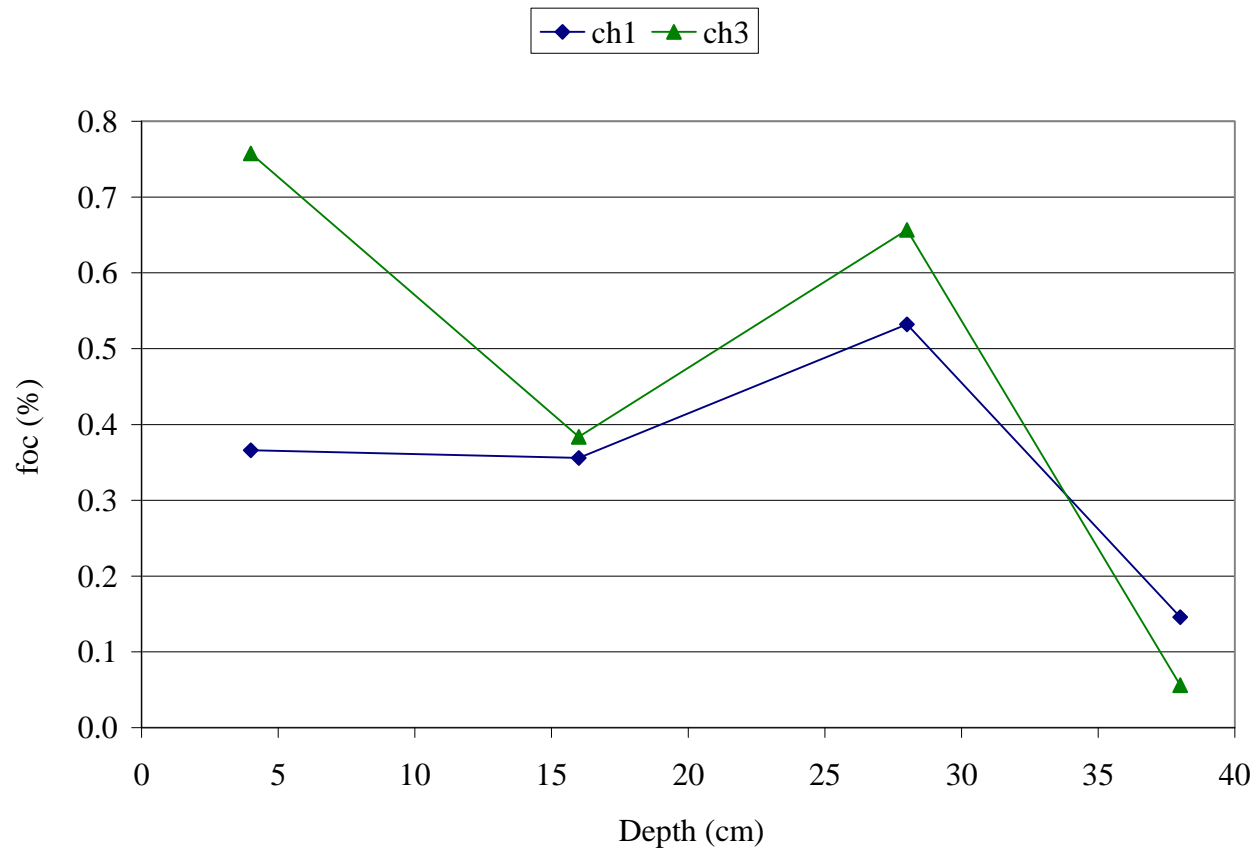


Figure S. 3. 22. Organic matter content fraction (f_{oc} , expressed as %) in the soil samples of channels 1 & 3; Soil samples were collected on August 9, 2004, day 150.

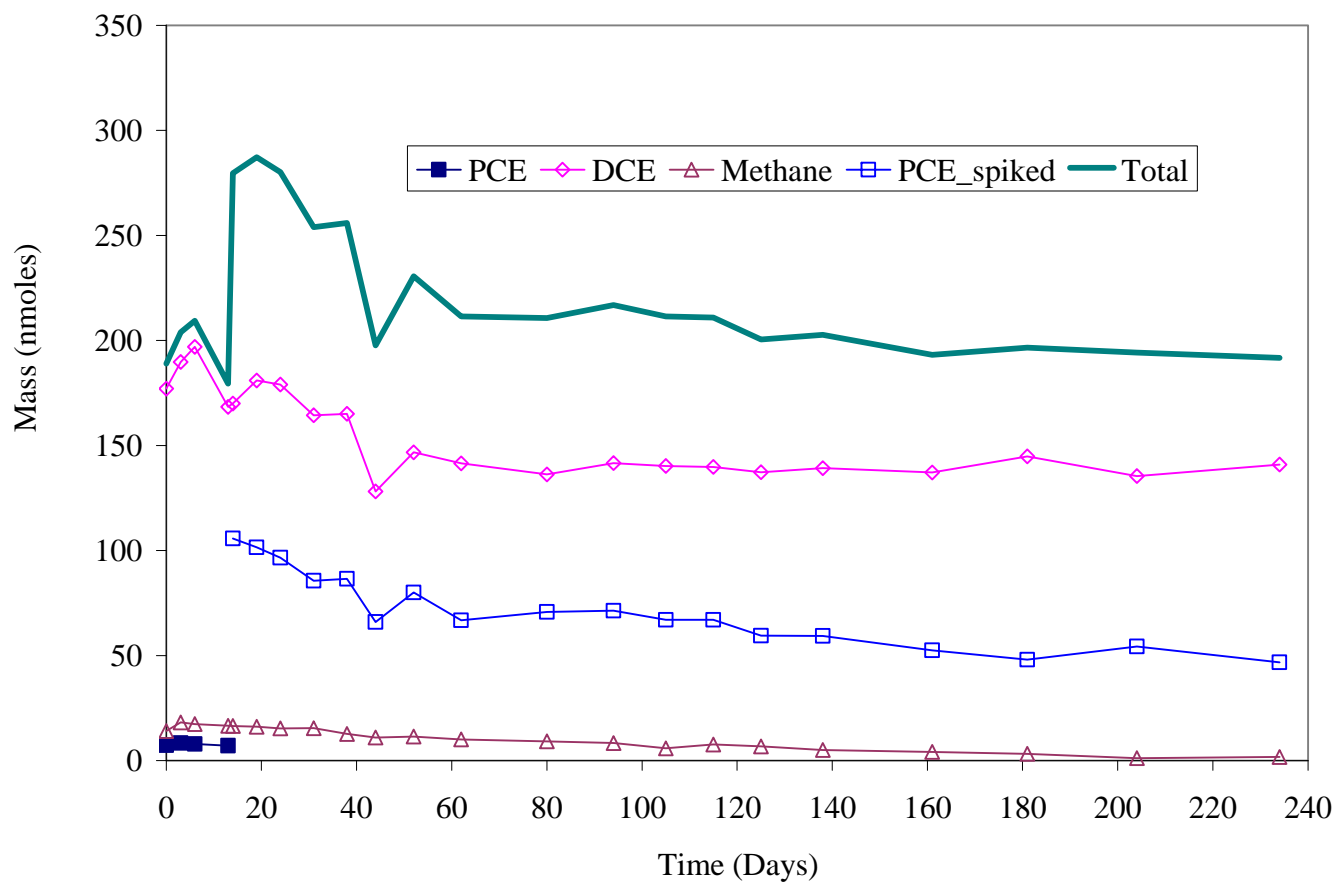


Figure S. 3. 23. Variation of PCE, DCE and methane in microcosm with glucose 0.005%, Batch 1; PCE was spiked on day 14.

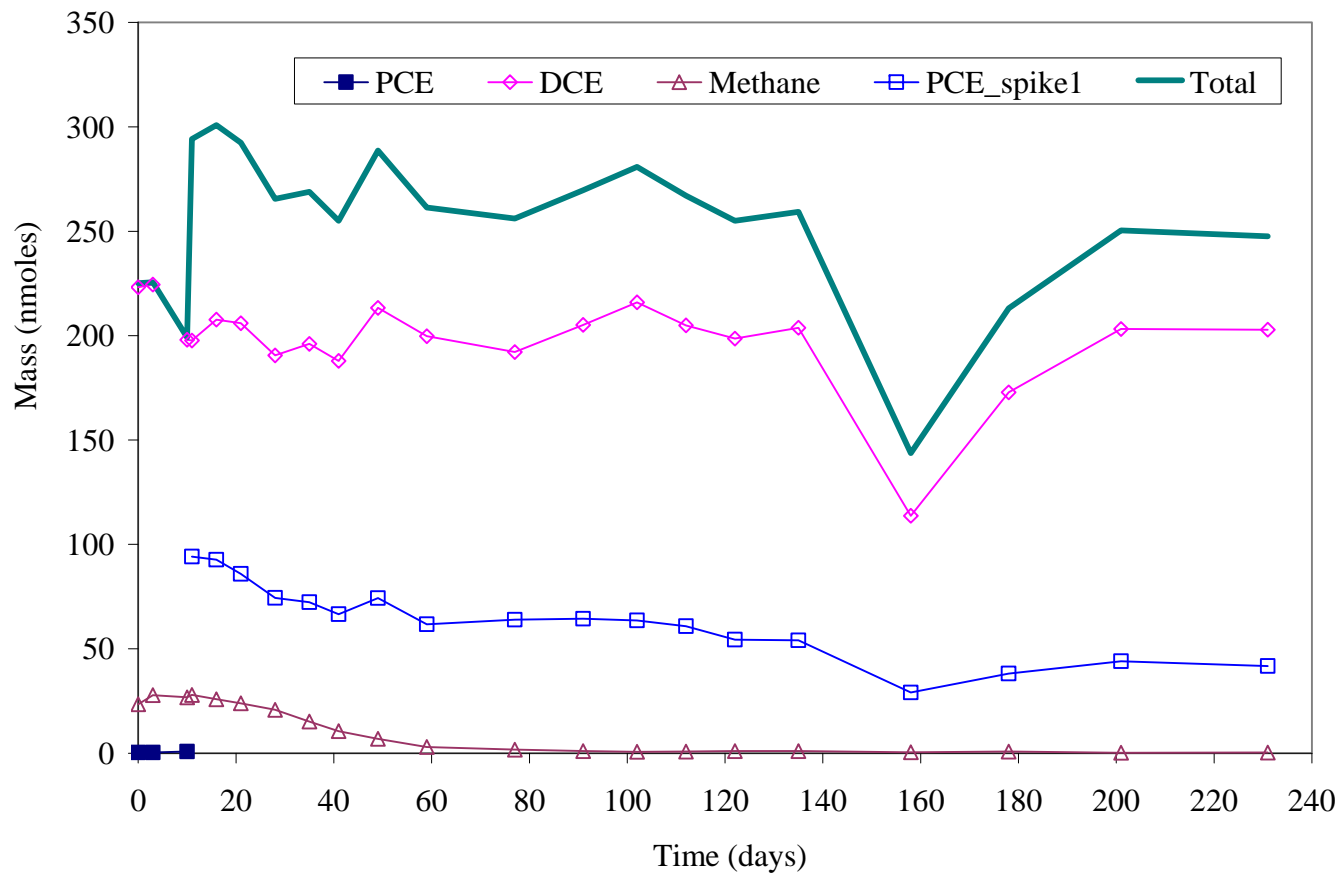


Figure S. 3. 24. Variation of PCE, DCE and methane in control microcosm, Batch 2; PCE was spiked on day 11.

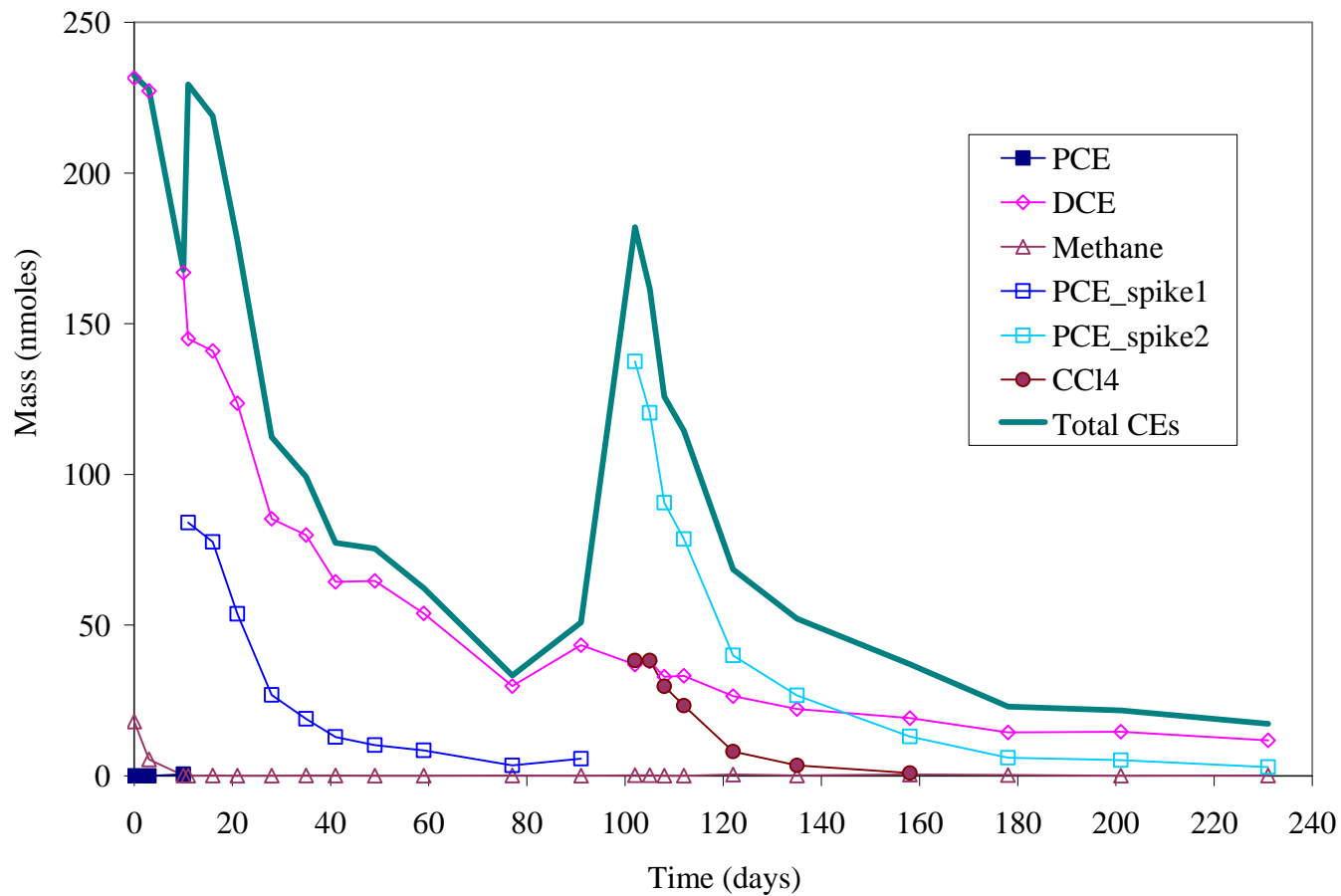


Figure S. 3. 25. Variation of PCE, DCE and methane in microcosm with lactic acid 0.85%, Batch 2; PCE was spiked on day 11 and 102. Carbon tetrachloride was added on day 102 to detect leakage.

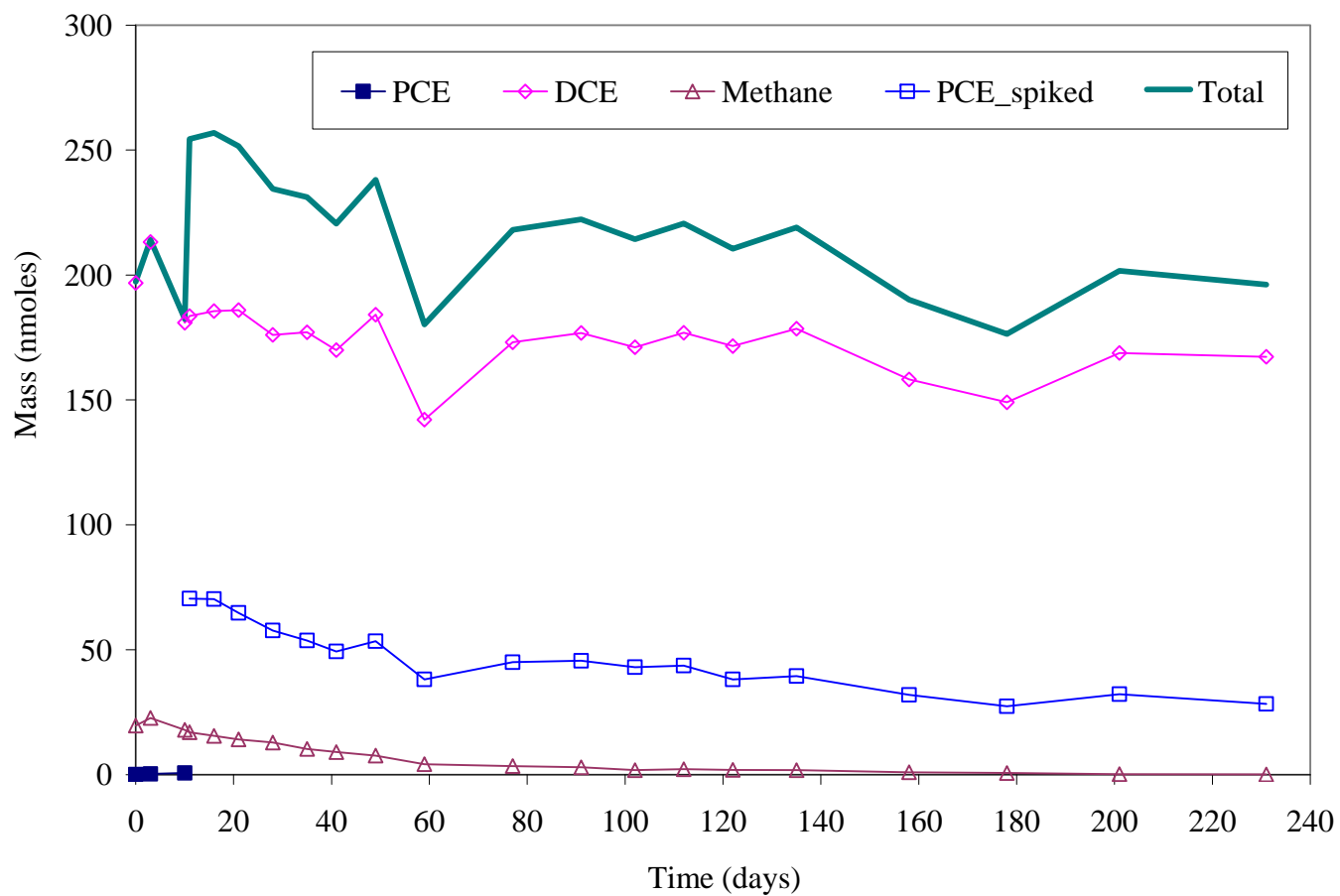


Figure S. 3. 26. Variation of PCE, DCE and methane in microcosm with yeast extract 0.01%, Batch 2; PCE was spiked on day 11.

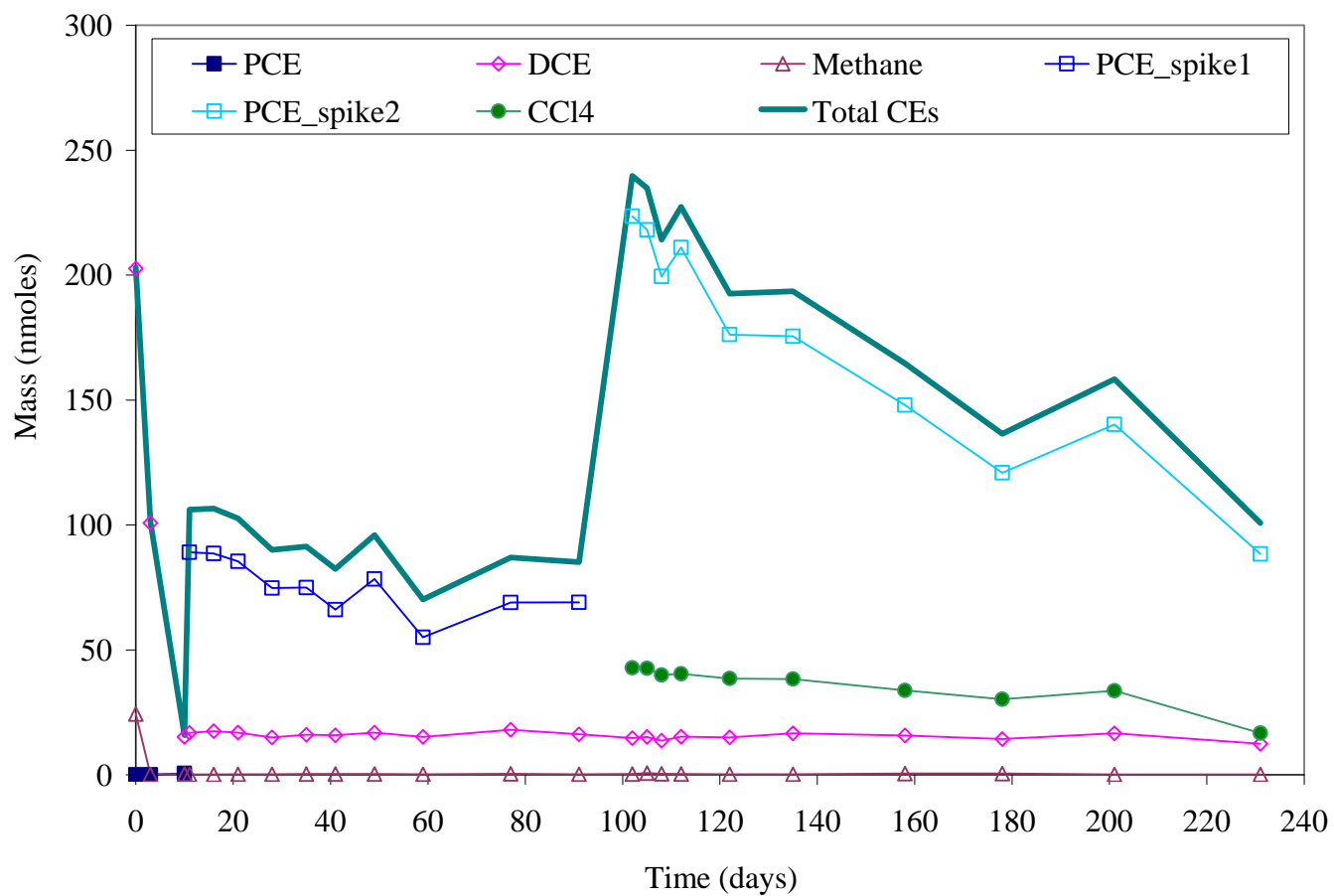


Figure S. 3. 27. Variation of PCE, DCE and methane in microcosm with glucose 0.01% and yeast extract 0.01%, Batch 2; PCE was spiked on day 11. Carbon tetrachloride was added on day 102 to detect leakage.

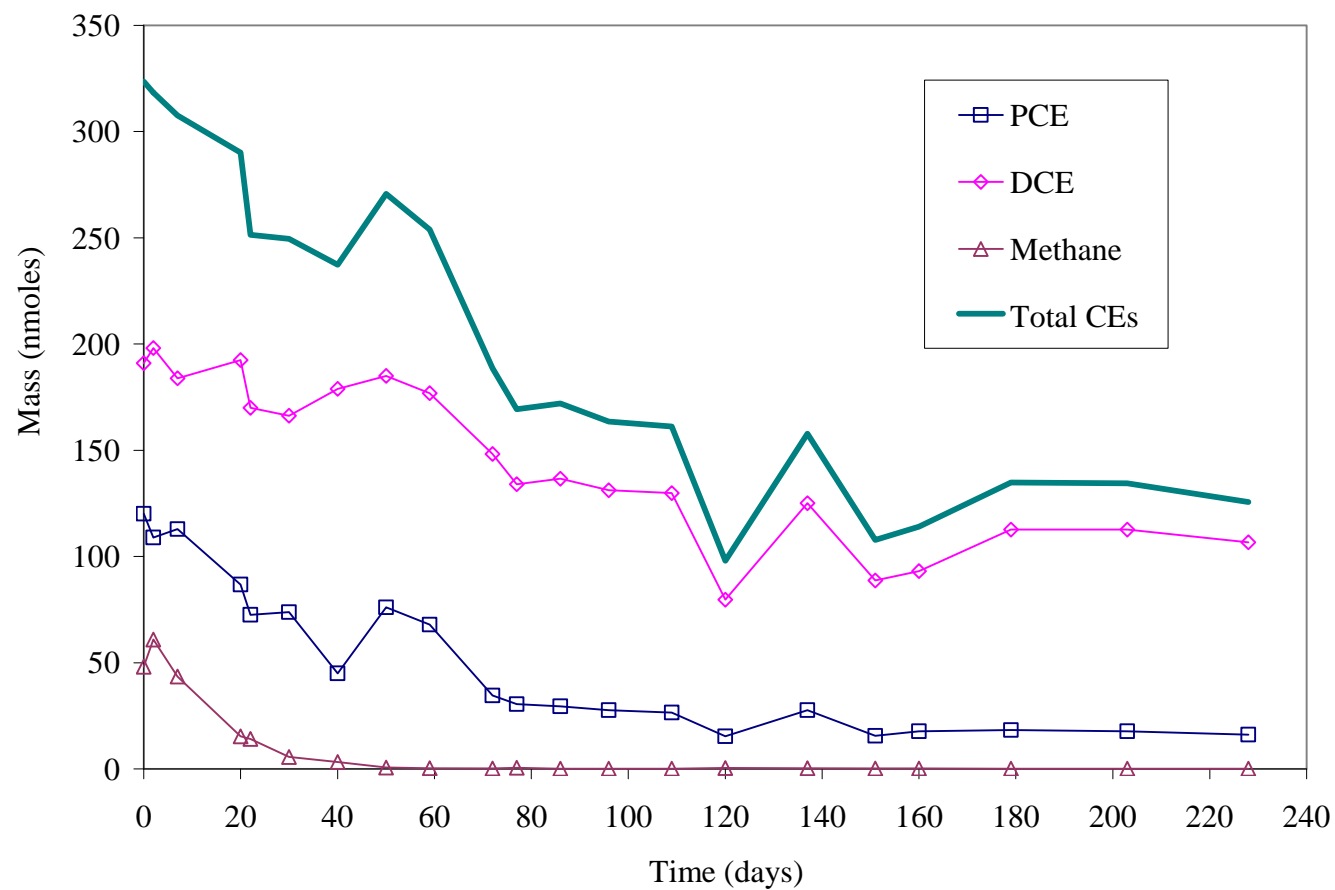


Figure S. 3. 28. Variation of PCE, DCE and methane in control microcosm, Batch 3; PCE was spiked on day 0.

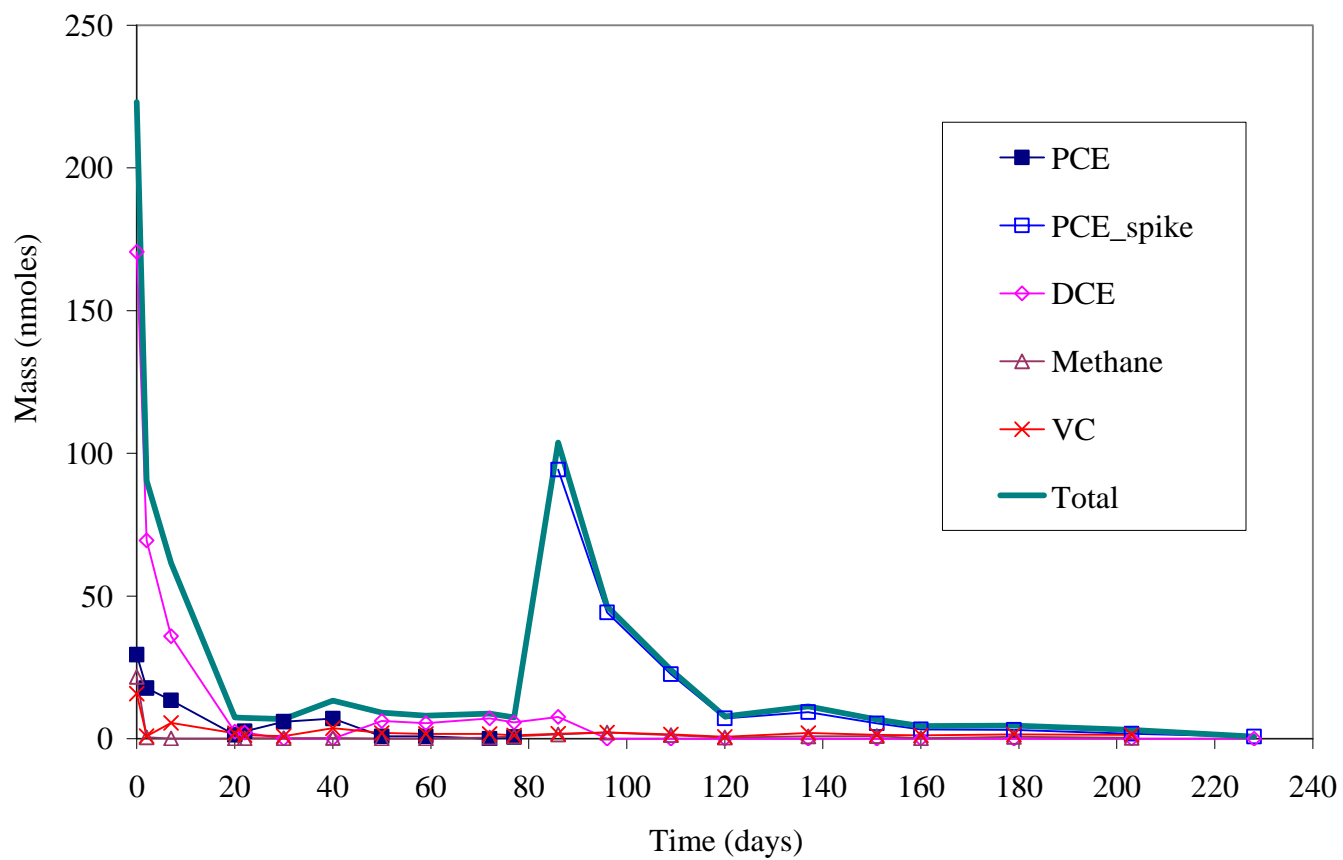


Figure S. 3. 29. Variation of PCE, DCE and methane in microcosm with soy oil methyl ester (SOME) 0.1%, Batch 3; PCE was spiked on day 0 and day 86. This may be a leaky vial.

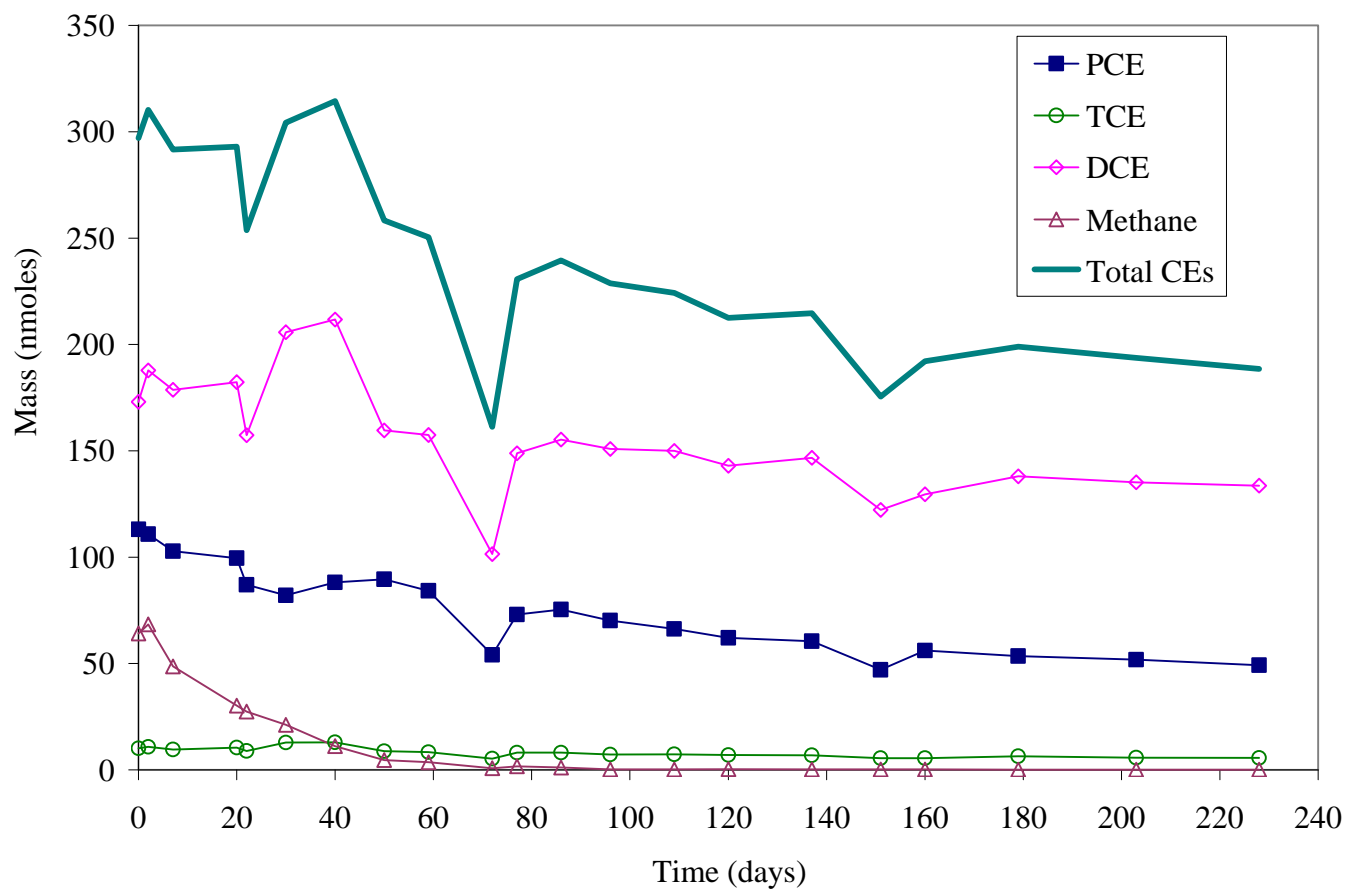


Figure S. 3. 30. Variation of PCE, DCE and methane in microcosm with glucose 0.01% and yeast extract 0.01%, Batch 3; PCE was spiked on day 0.

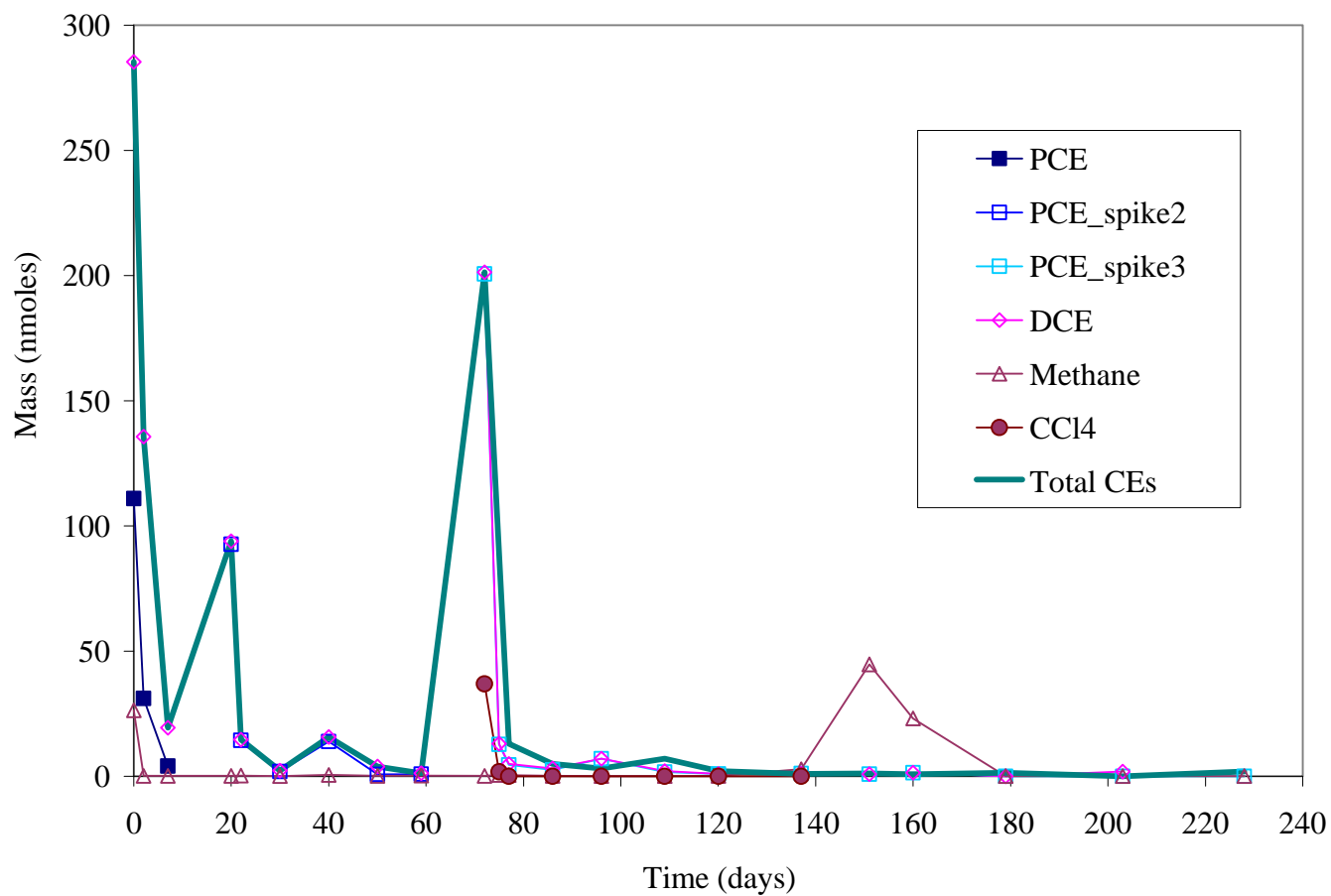


Figure S. 3. 31. Variation of PCE, DCE and methane in microcosm with lactic acid 0.085% and yeast extract 0.01%, Batch 3; PCE was spiked on days 0, 20 and 72. Carbon tetrachloride was spiked on day 72 to detect leakage. This is a leaky vial.

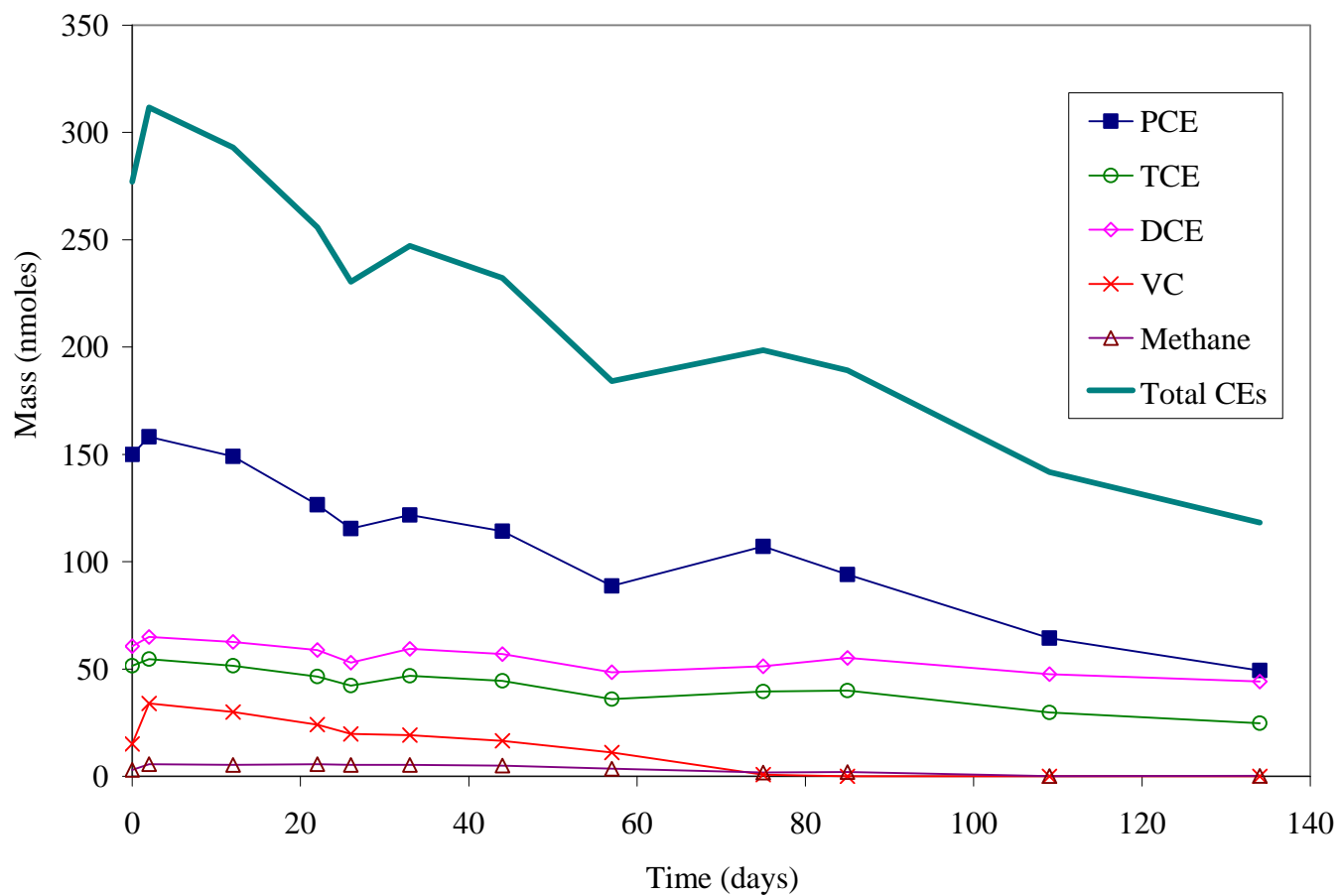


Figure S. 3. 32. Variation of PCE, TCE, VC, DCE and methane in control microcosm, Batch 4 (ch 1 outlet liquid); KB-1 was added on day 23.

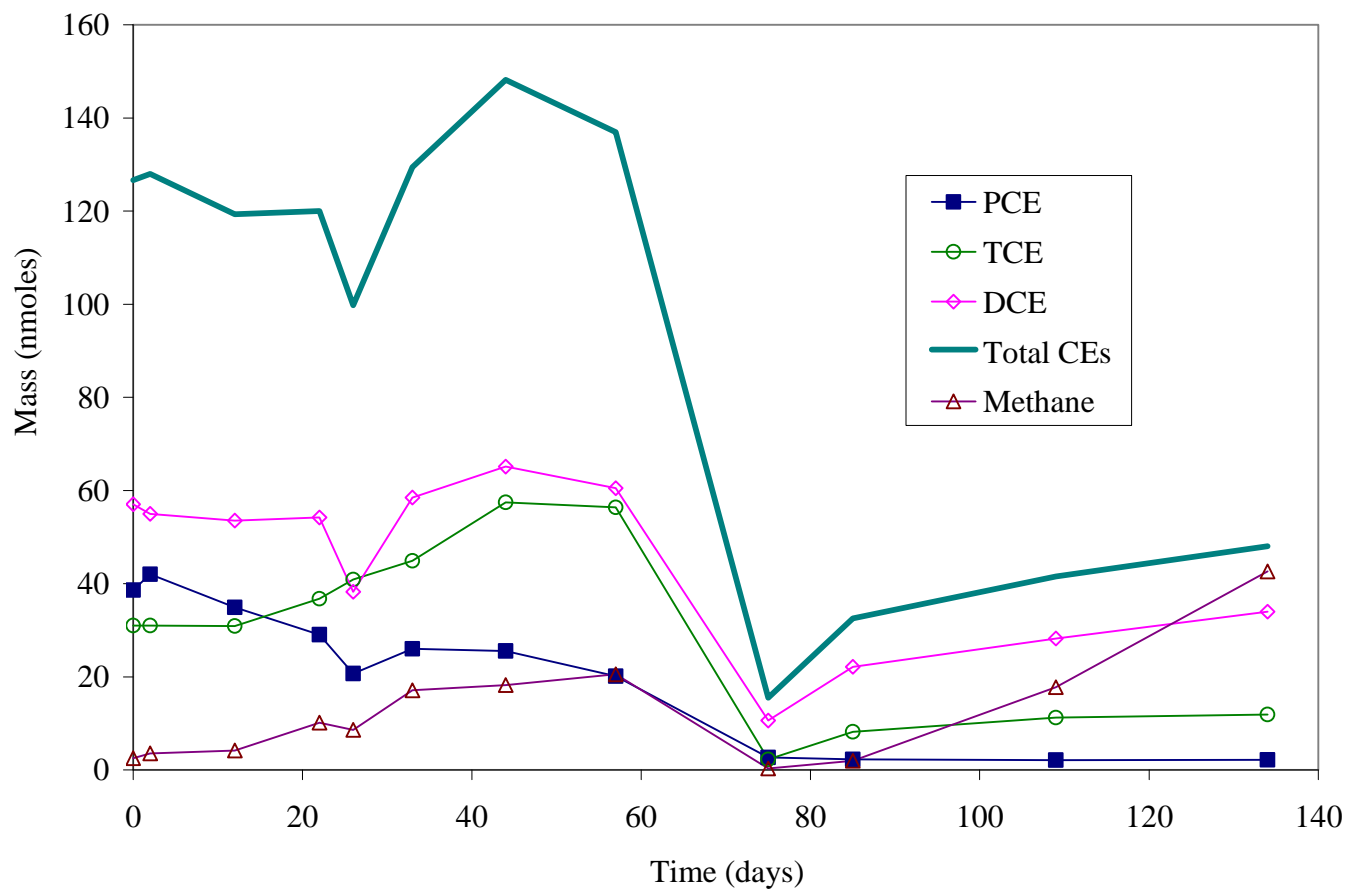


Figure S. 3. 33. Variation of PCE, TCE, DCE and methane in soy oil methyl ester 0.1%, Batch 4 (ch 1 outlet liquid); KB-1 was added on day 23.

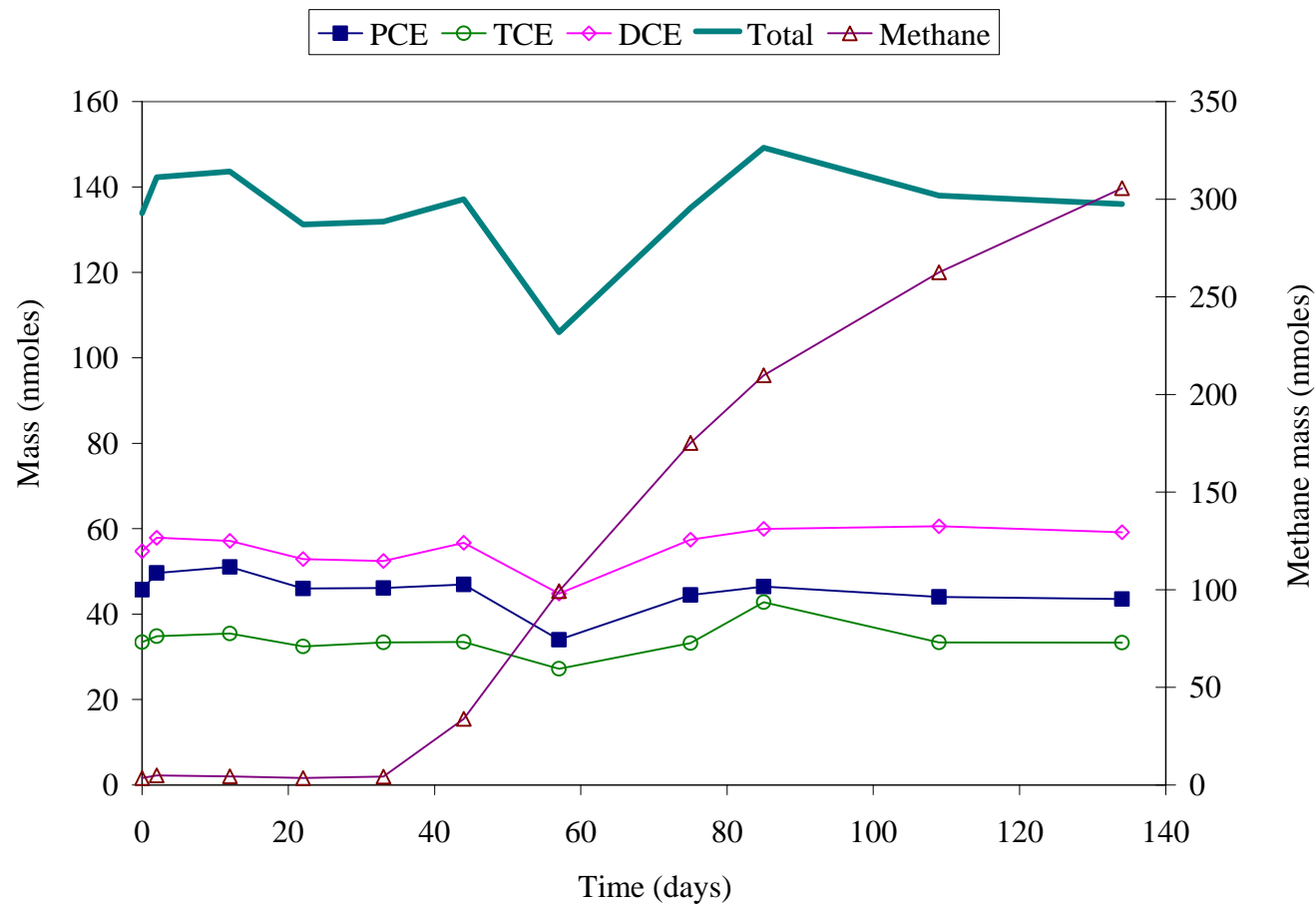


Figure S. 3. 34. Variation of PCE, TCE, DCE, VC and methane in microcosm with soy oil methyl ester 0.1% and yeast extract 0.01%, Batch 4 (ch 1 outlet liquid); KB-1 was added on day 23. Methane amounts are on right hand (secondary) y-axis.

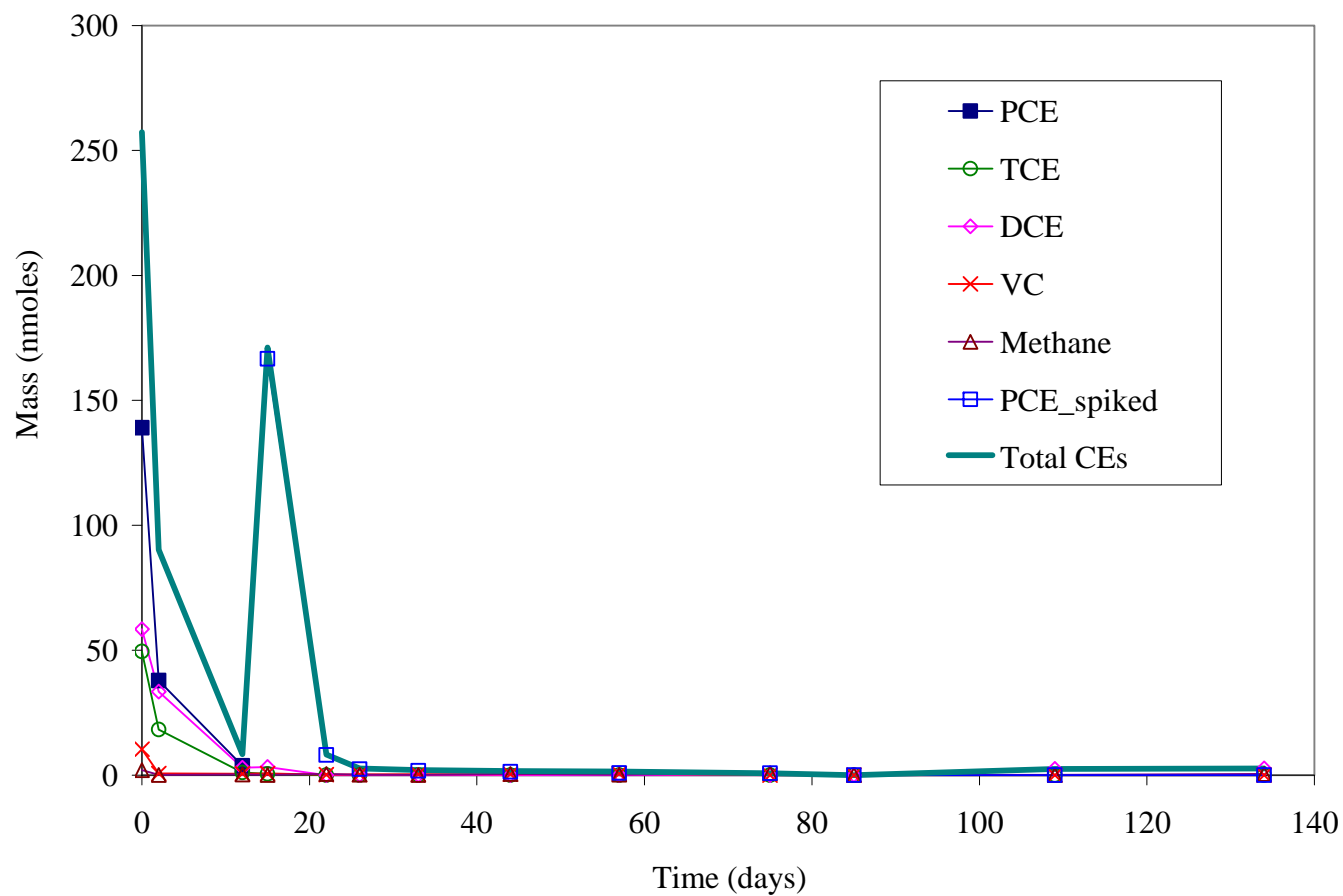


Figure S. 3. 35. Variation of PCE,TCE, DCE, VC and methane in yeast extract 0.01%, Batch 4 (ch 1 outlet liquid); KB-1 was added on day 23. This may be a leaky vial.

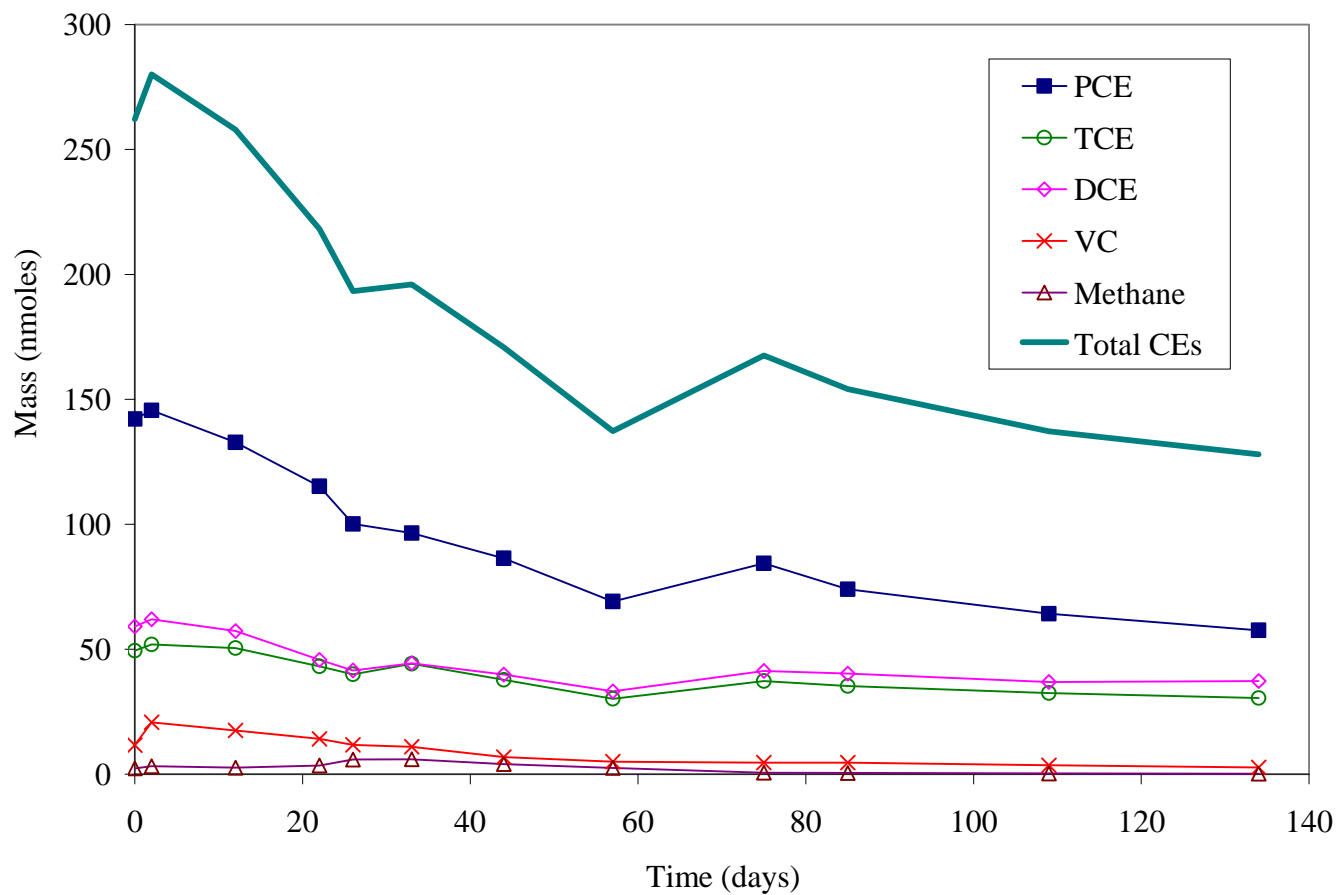


Figure S. 3. 36. Variation of PCE, TCE, DCE, VC and methane in glucose 0.01% and yeast extract 0.01%, Batch 4 (ch 1 outlet liquid); KB-1 was added on day 23.

Table S. 3. 1. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 229, 10/27/2004) collected from channels 1, 2 and 3. Soil samples were collected at a distance of 65 cm from inlet.

	Depth (cm)	Channel 1	Channel 2	Channel 3
Mass of aqueous phase (gm)	2-9	0.046	0.6885	0.7202
	13-20	0.2134	0.65	0.8989
	25-32	0.0757	0.6803	1.2675
	35-42	0.7264	1.2293	1.1417
	Depth (cm)	Channel 1	Channel 2	Channel 3
Moisture content fraction (w/w)	2-9	0.01	0.12	0.18
	13-20	0.04	0.11	0.16
	25-32	0.02	0.13	0.16
	35-42	0.09	0.15	0.17
	Depth (cm)	Channel 1	Channel 2	Channel 3
Mass of dry soil (gm)	2-9	3.9821	4.8262	3.3897
	13-20	4.9303	5.2065	4.8074
	25-32	4.931	4.6903	6.4792
	35-42	7.1396	6.7289	5.6172

Table S. 3. 2. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 353, 2/28/2005) collected from channels 1, 2 and 3. Soil samples were collected at a distance of 90 cm from inlet in channels 1 and 2, and 100 cm from inlet in channel 3.

	Depth (cm)	Channel 1	Channel 2	Channel 3
Mass of aqueous phase (gm)	2-9	0.0378	0.4748	0.9422
	13-20	0.1593	0.9445	1.1561
	25-32	0.2035	0.9533	0.7295
	35-42	0.832	0.5356	0.72
	Depth (cm)	Channel 1	Channel 2	Channel 3
Moisture content fraction (w/w)	2-9	0.01	0.09	0.22
	13-20	0.03	0.13	0.15
	25-32	0.03	0.13	0.14
	35-42	0.12	0.11	0.16
	Depth (cm)	Channel 1	Channel 2	Channel 3
Mass of dry soil (gm)	2-9	3.8464	4.597	3.4262
	13-20	5.6711	6.1252	6.4459
	25-32	6.2594	6.1438	4.4449
	35-42	6.3114	4.5199	3.8966

Table S. 3. 3. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 385, 4/1/2005) collected from channel 2. Soil samples were collected while installing monitoring wells. Samples were collected at a depth of 37 cm for monitoring wells 1 to 5. An additional sample was collected at a depth of 41 cm at well 5.

	Well 1	Well 2	Well 3	Well 4	Well 5	Well Depth 41 cm
Mass of aqueous phase (gm)	1.7739	1.5634	3.0614	1.6008	0.415	0.9204
Moisture content fraction (w/w)	0.18	0.17	0.35	0.17	0.07	0.10
Mass of dry soil (gm)	8.2241	7.4566	5.6273	7.7661	5.1206	7.6116

Table S. 3. 4. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 812, 6/10/2006) collected from channels 1, 2 and 3. Soil samples were collected at a distance of 10 cm, 14 cm, and 30 cm from inlet in channels 1, 2, and 3, respectively.

	Depth (cm)	Channel 1	Channel 2	Channel 3
Mass of aqueous phase (gm)	2-9	0.066	0.641	0.207
	13-20	0.666	1.024	0.788
	25-32	1.238	1.138	1.266
	35-42	1.231	0.747	0.575
	Depth (cm)	Channel 1	Channel 2	Channel 3
Moisture content fraction (w/w)	2-9	0.02	0.13	0.09
	13-20	0.13	0.17	0.14
	25-32	0.16	0.16	0.16
	35-42	0.17	0.17	0.14
	Depth (cm)	Channel 1	Channel 2	Channel 3
Mass of dry soil (gm)	2-9	2.927	4.167	2.132
	13-20	4.573	4.959	4.866
	25-32	6.621	5.851	6.738
	35-42	6.225	3.776	3.442

Table S. 3. 5. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 955, 10/23/2006) collected from channel 1*.

*Sample	Mass of aqueous phase (gm)	Moisture content fraction (w/w)	Mass of dry soil (gm)
L1D1	0.1382	0.05	2.8296
L1D2	1.0433	0.14	6.5933
L1D3	1.3145	0.16	6.9854
L1D4	0.8095	0.14	5.011
L1D5	0.749	0.16	3.8748
L2D1	0.1189	0.03	3.9597
L2D2	0.6671	0.15	4.9089
L3D2	0.7222	0.09	4.6119
L3D4	0.8049	0.14	4.9642

*Soil samples were collected at a distance of 18 cm (L1), 20 cm (L2), and 75 cm (L3) from inlet and at depths (cm) of 1-9 (D1), 9-17 (D2), 17-25 (D3), 25-33 (D4), and 33-41 (D5).

Table S. 3. 6. Mass of aqueous phase, moisture content fractions, and dry weight of soil in the soil samples (day 987, 11/26/2006) collected from channels 2 and 3. Soil samples were collected at a distance of 32 cm and 27 cm from inlet in channels 2 and 3, respectively.

	Depth (cm)	Channel 2	Channel 3
Mass of aqueous phase (gm)	0-7	0.3427	0.2085
	10-16	0.7588	0.6319
	16-22	0.6399	0.9677
	22-28	0.931	0.4766
	28-34	0.7867	0.4241
	34-41	1.0803	0.9624
	Depth (cm)	Channel 2	Channel 3
Moisture content fraction (w/w)	0-7	0.06	0.10
	10-16	0.11	0.14
	16-22	0.11	0.16
	22-28	0.15	0.14
	28-34	0.14	0.15
	34-41	0.16	0.15
	Depth (cm)	Channel 2	Channel 3
Mass of dry soil (gm)	0-7	5.2135	1.9347
	10-16	6.2123	4.0116
	16-22	5.1949	5.1613
	22-28	5.243	2.8835
	28-34	4.8608	2.394
	34-41	5.7149	5.3468

Supplement to Chapter 4

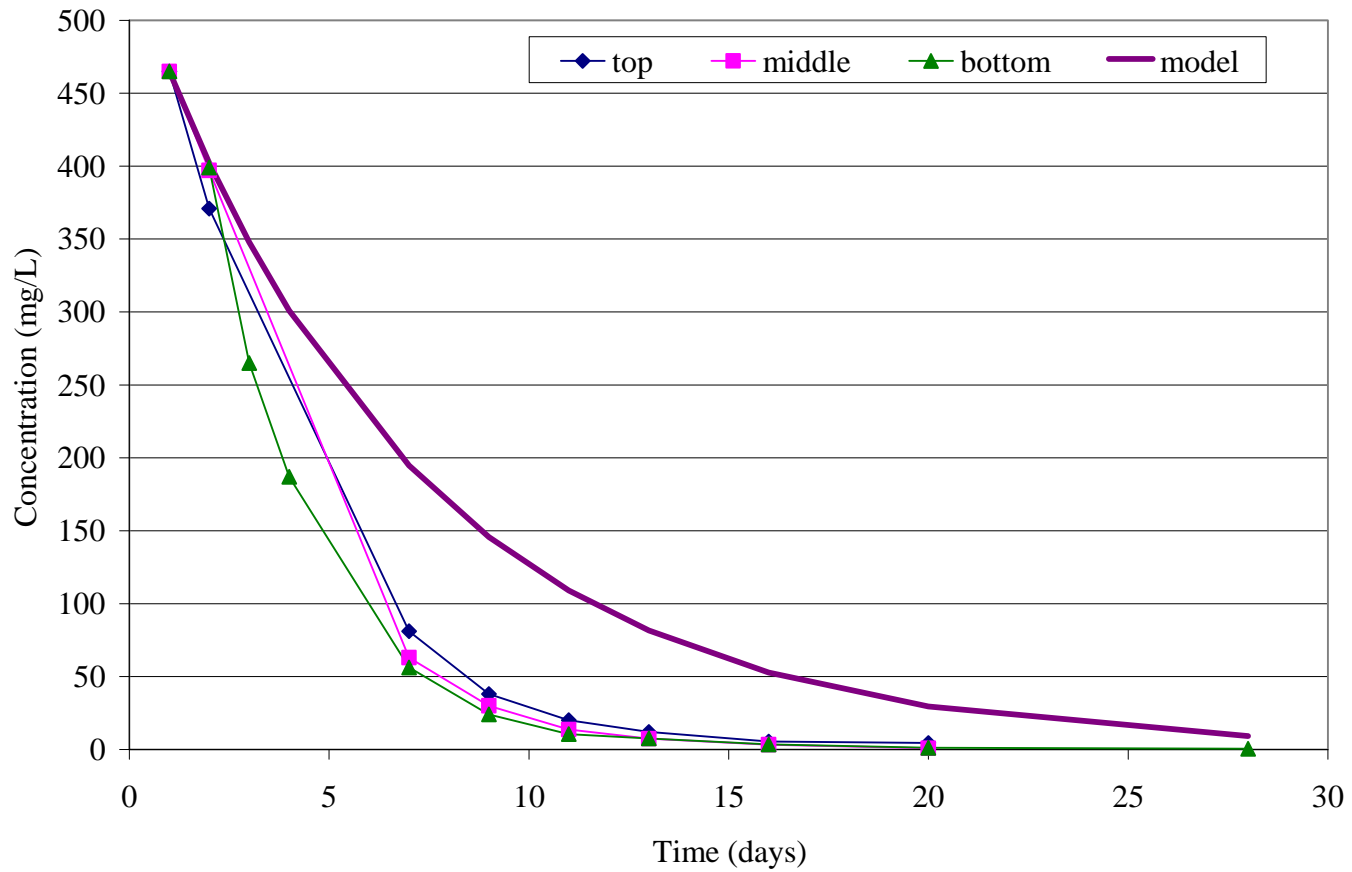


Figure S. 4. 1. Bromide concentrations in MW-8D (injection well); Injected concentration = 500 mg/L, 8/2/2004, day 0; groundwater velocity for dilution model is 0.06 m/day (0.2 ft/day).

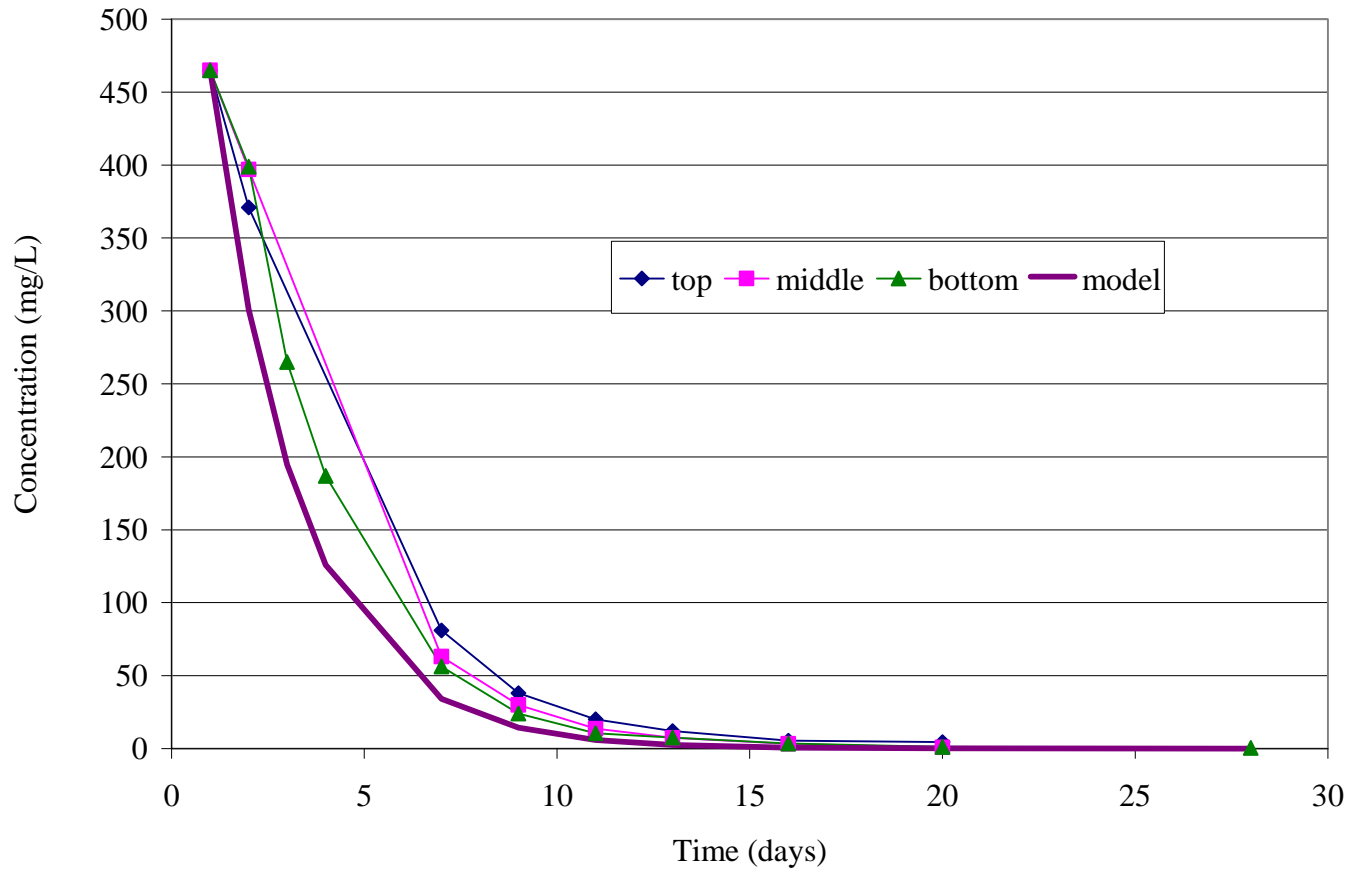


Figure S. 4. 2. Bromide concentrations in MW-8D (injection well); Injected concentration = 500 mg/L, 8/2/2004, day 0; groundwater velocity for dilution model is 0.18 m/day (0.6 ft/day).

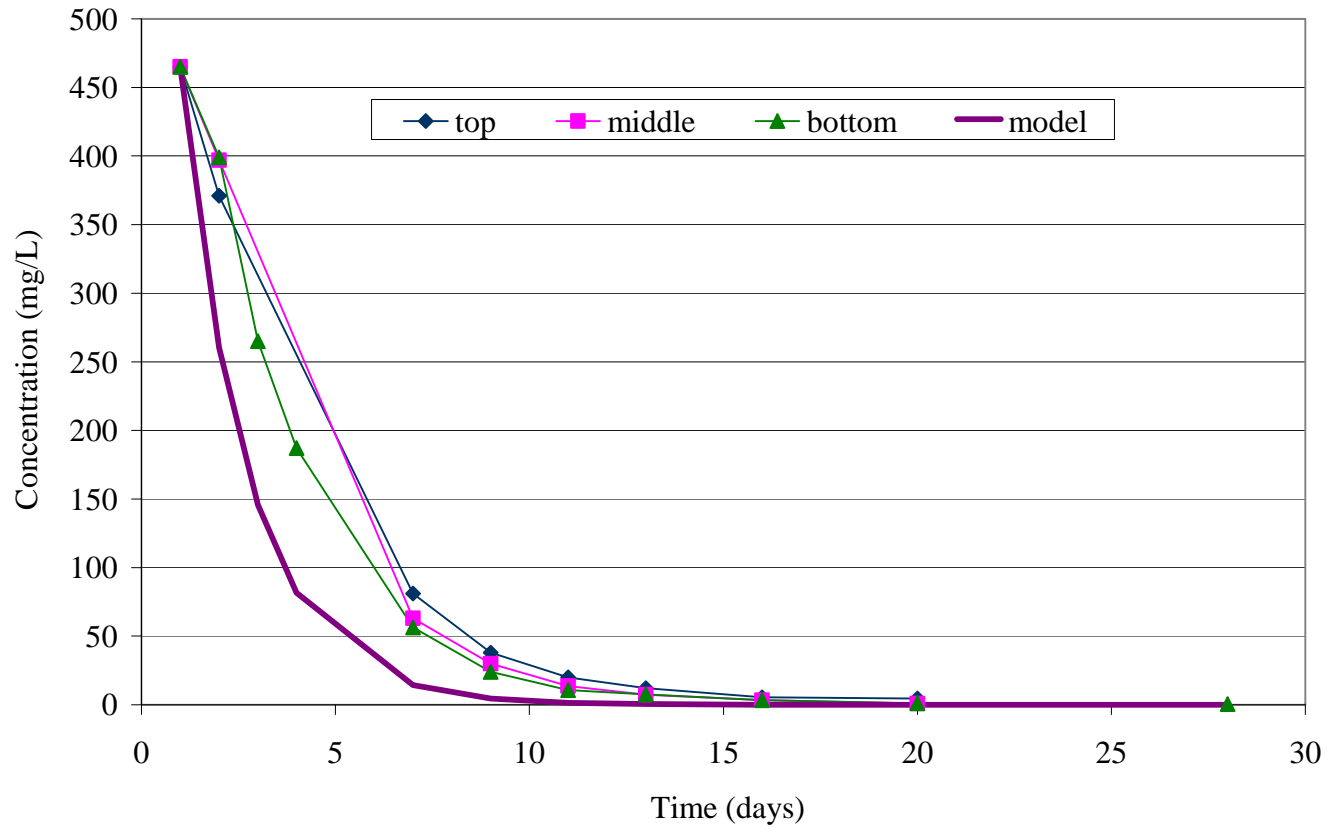


Figure S. 4. 3. Bromide concentrations in MW-8D (injection well); Injected concentration = 500 mg/L, 8/2/2004, day 0; groundwater velocity for dilution model is 0.24 m/day (0.8 ft/day).

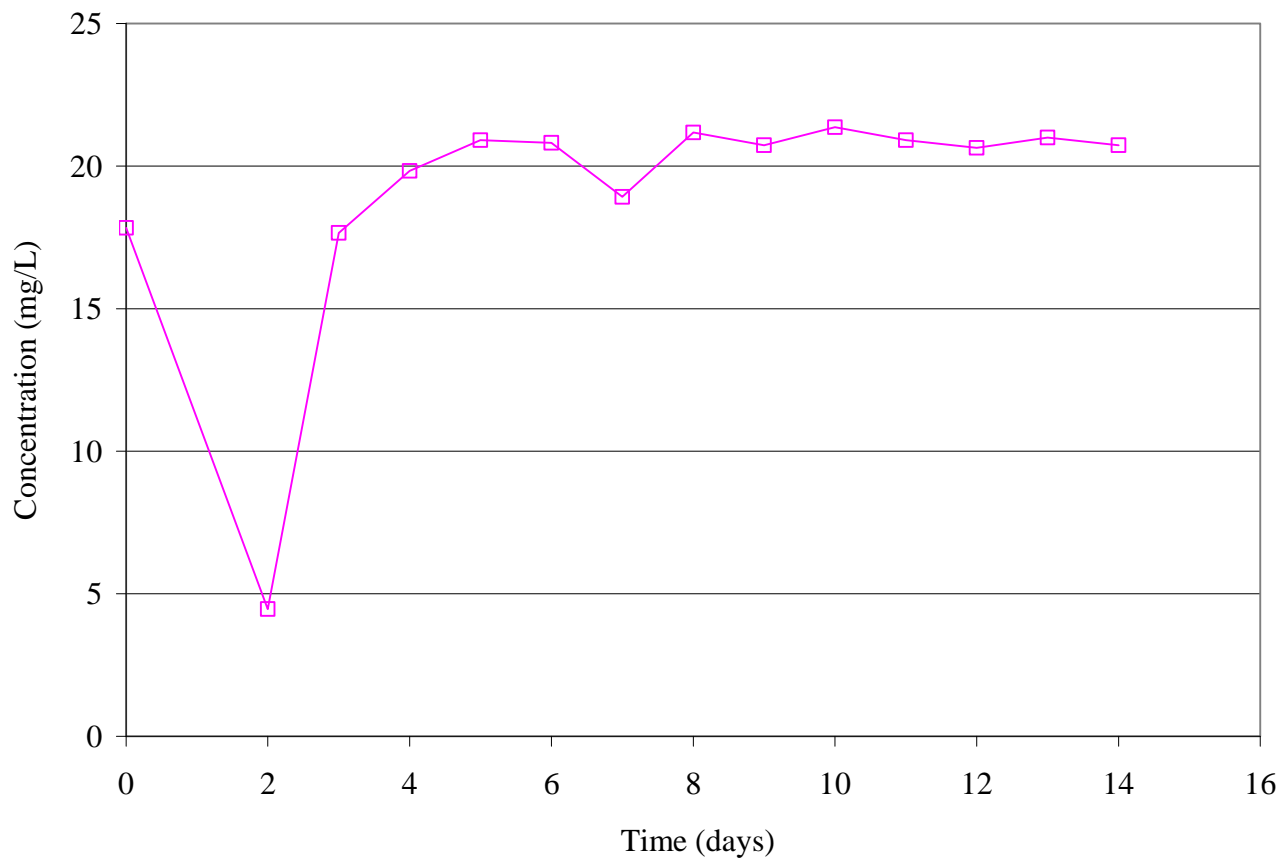


Figure S. 4. 4. Nitrate concentrations at the middle depth samples (23 ft bgs) in well MW-8S (tracer injection well); Data from tracer study 2004, day 0 is 9/15/04.

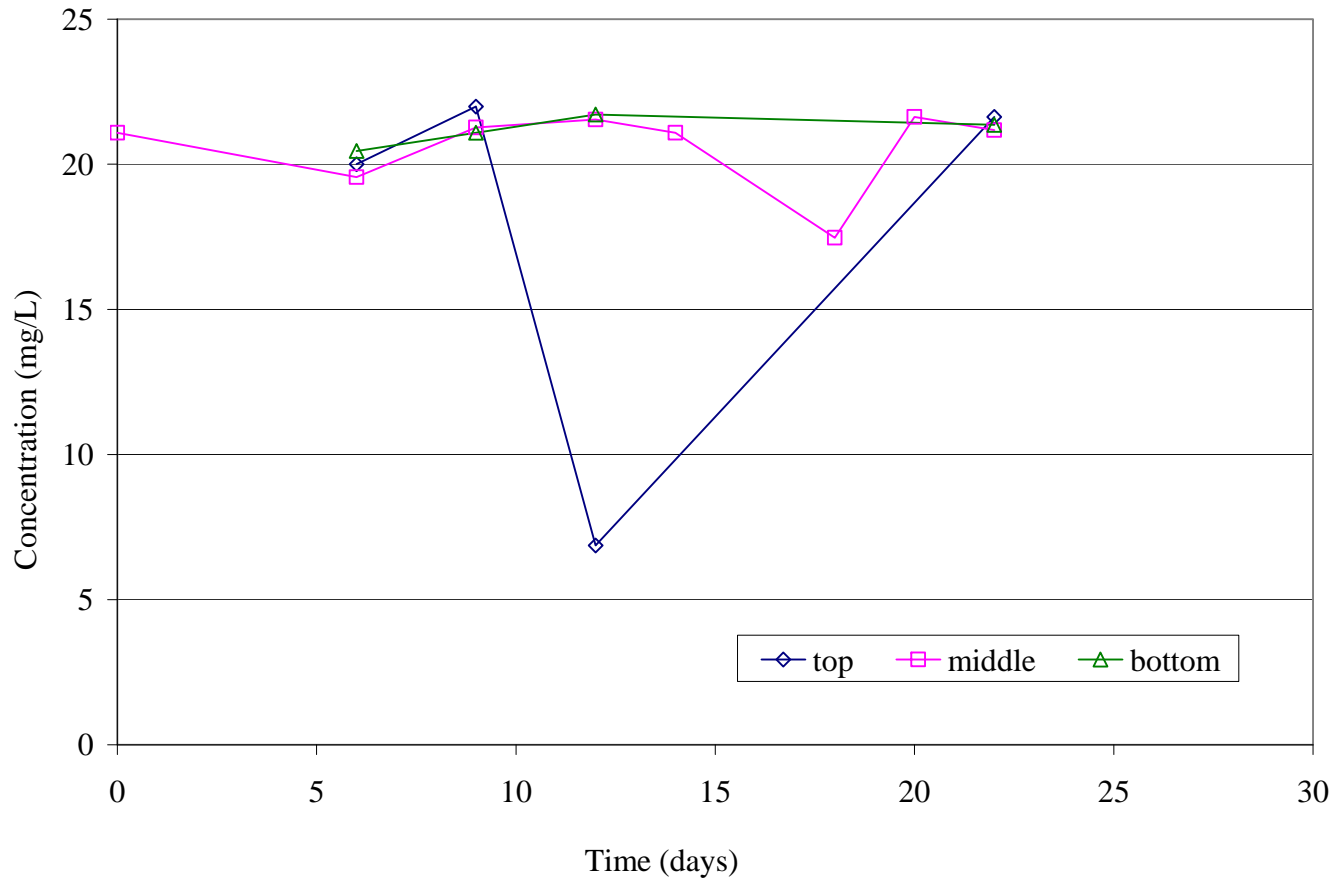


Figure S. 4. 5. Nitrate concentrations at the middle depth samples (23 ft bgs) in well MW-9S (tracer injection well); Data from tracer study 2004, day 0 is 9/15/04.

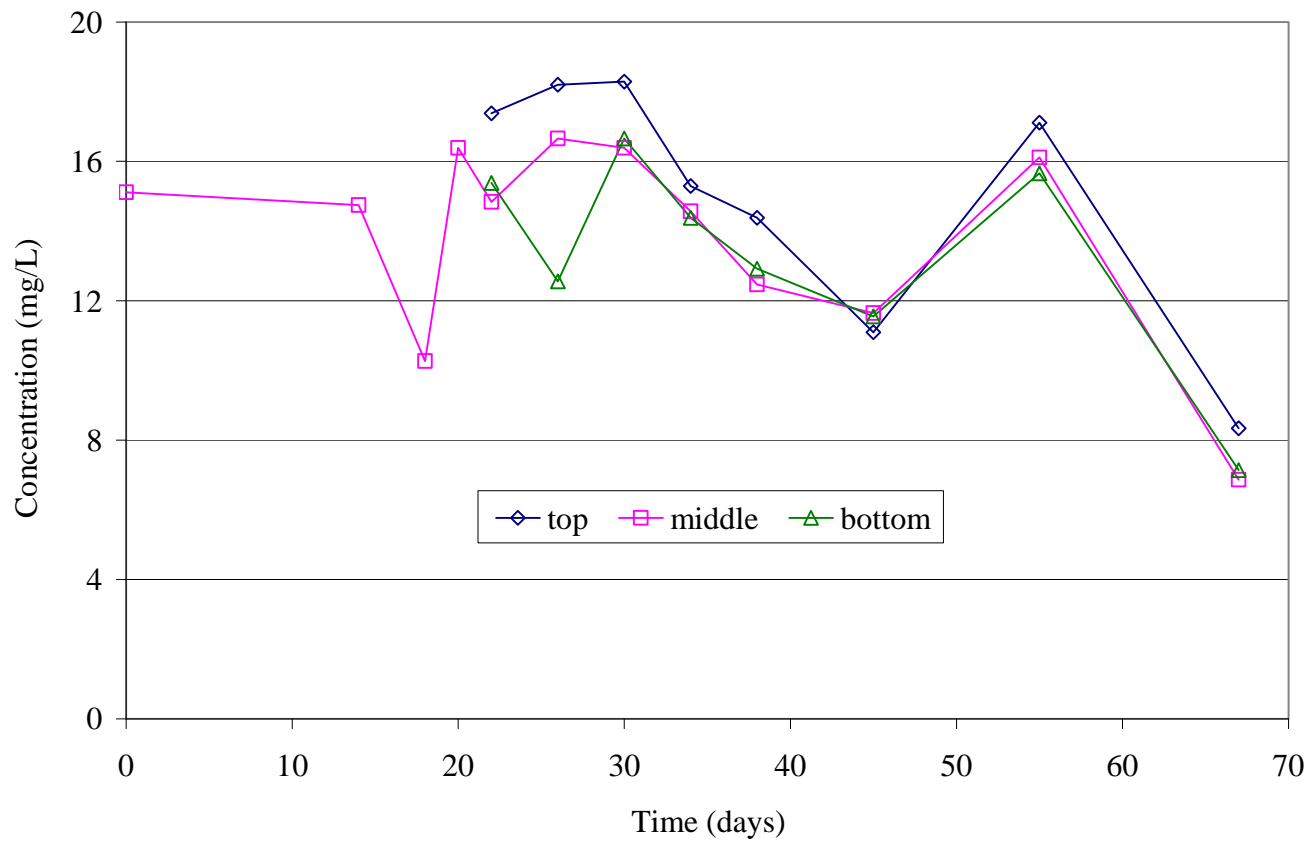


Figure S. 4. 6. Nitrate concentrations at the middle depth samples (23 ft bgs) in well MW-10S (tracer injection well); Data from tracer study 2004, day 0 is 9/15/04.

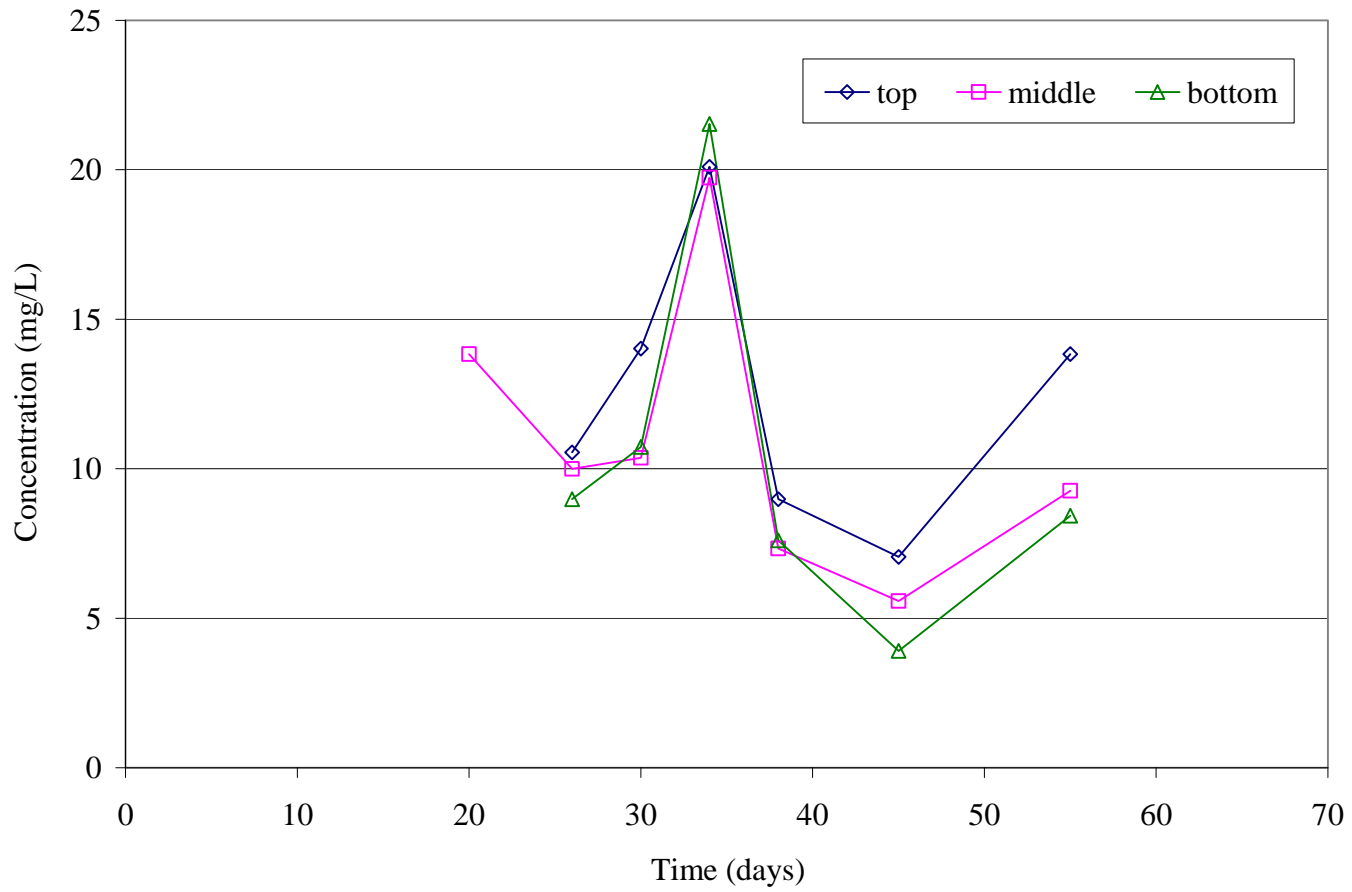


Figure S. 4. 7. Nitrate concentrations at the middle depth samples (23 ft bgs) in well MW-12S (tracer injection well); Data from tracer study 2004, day 0 is 9/15/04.

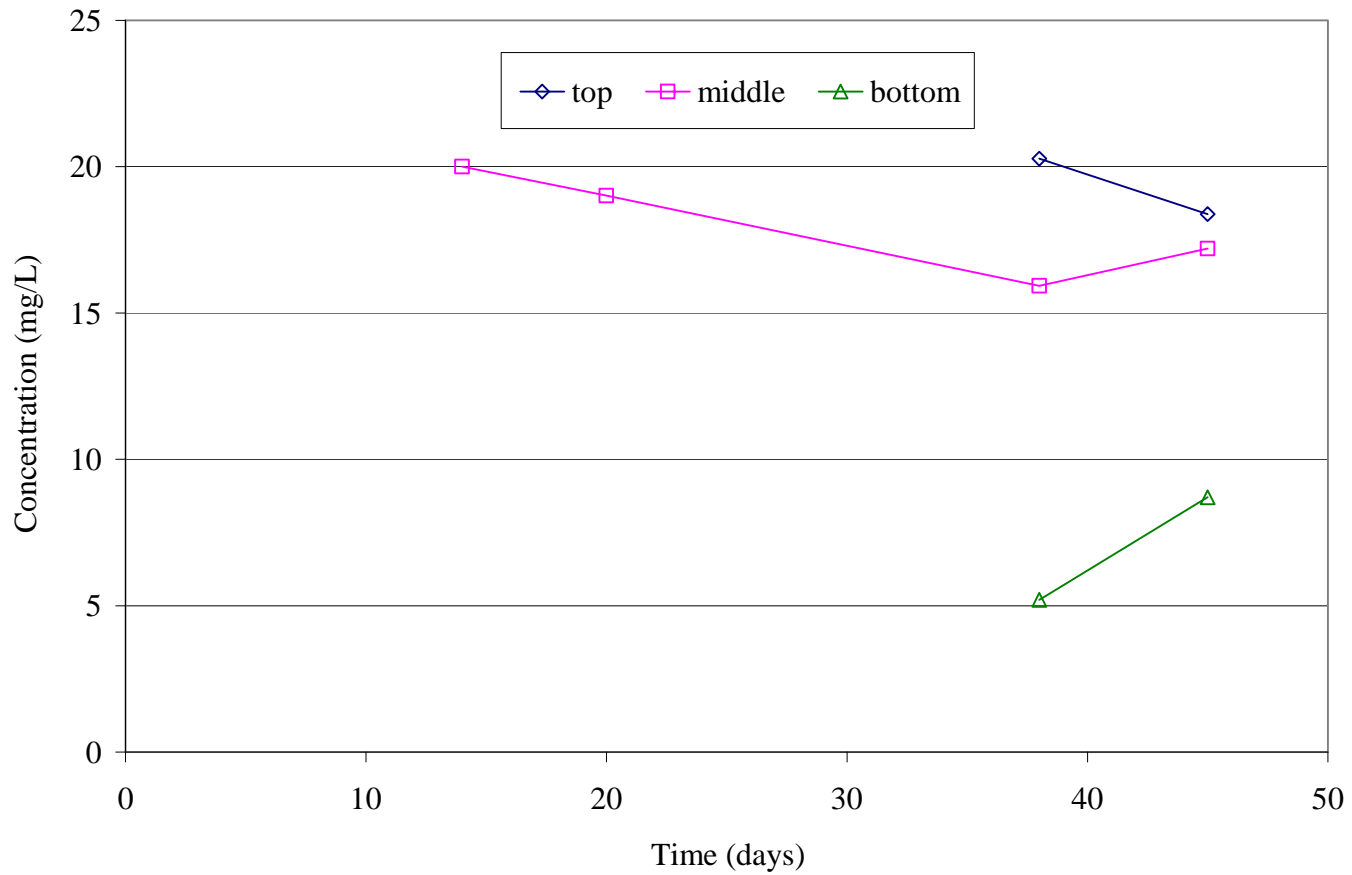


Figure S. 4. 8. Nitrate concentrations at the middle depth samples (23 ft bgs) in well MW-7S (tracer injection well); Data from tracer study 2004, day 0 is 9/15/04.

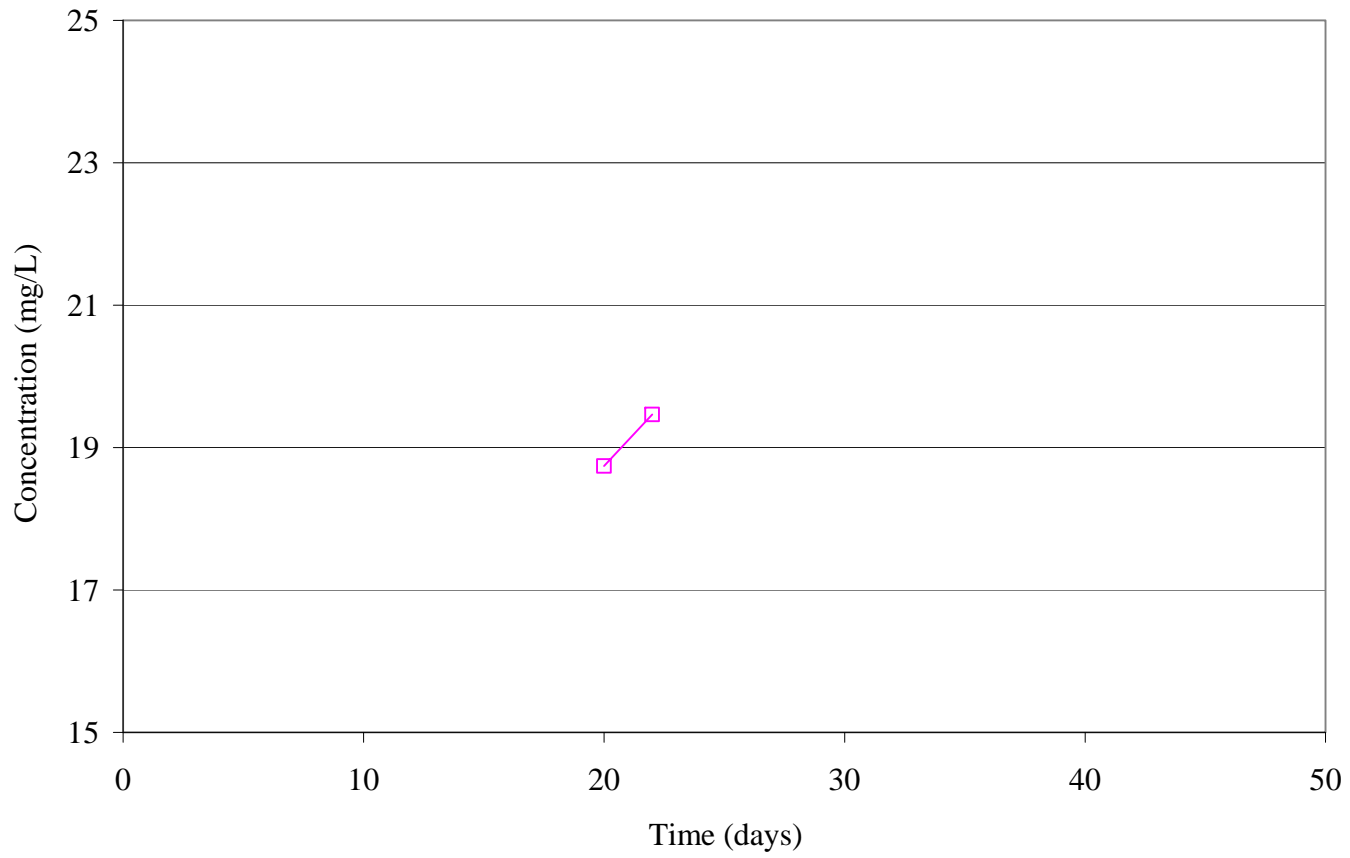


Figure S. 4. 9. Nitrate concentrations at the middle depth samples (23 ft bgs) in well MW-11S (tracer injection well); Data from tracer study 2004, day 0 is 9/15/04.

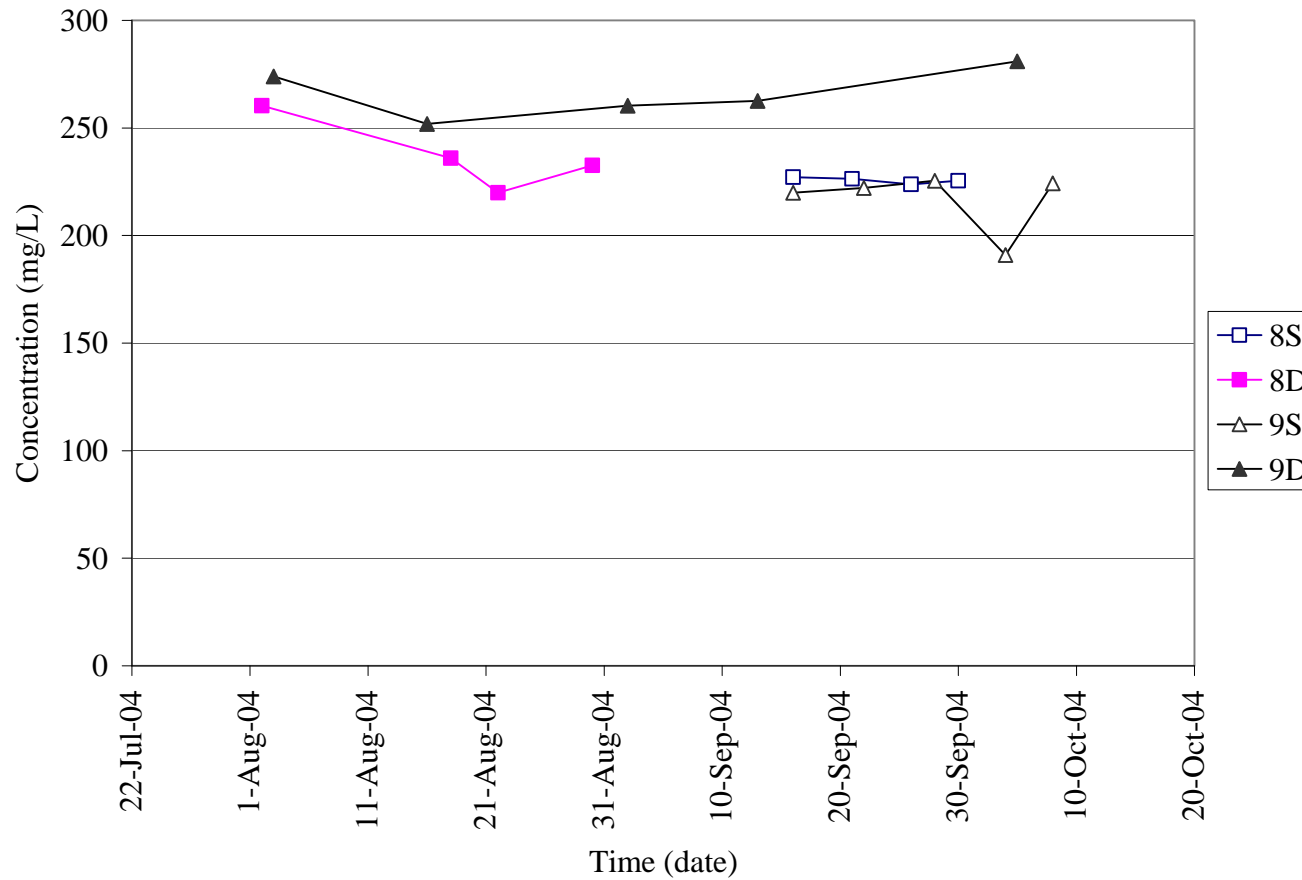


Figure S. 4. 10. Sulfate concentrations at the middle depth samples (23 ft bgs) in the shallow and deep wells MW-8 and MW-9; Data from tracer study 2004, day 0 is 9/15/04 for shallow wells and day 0 is 8/16/04 for deep wells.

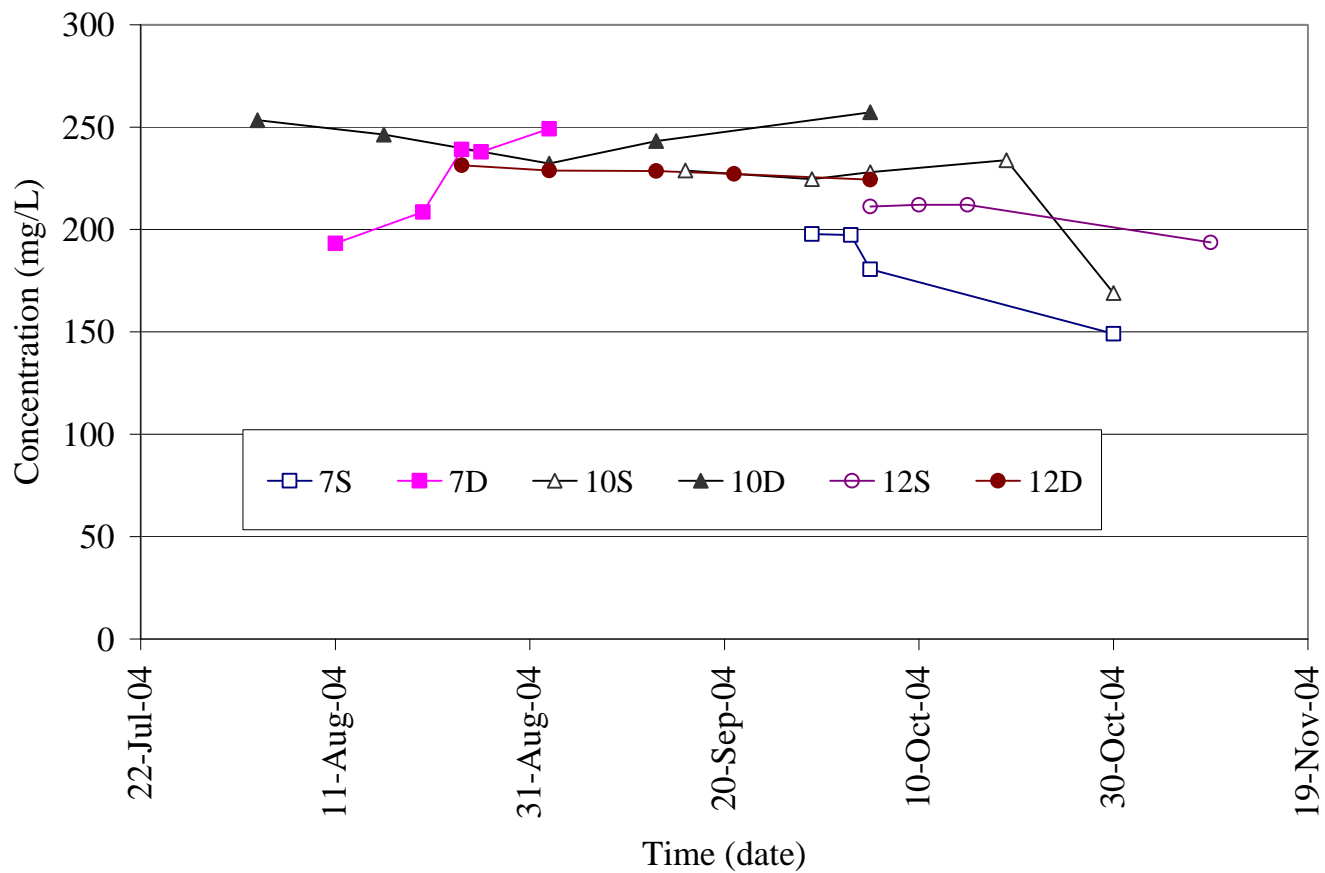


Figure S. 4. 11. Sulfate concentrations at the middle depth samples (23 ft bgs) in the shallow and deep wells MW-7, MW-10 and MW-12; Data from tracer study 2004, day 0 is 9/15/04 for shallow wells and day 0 is 8/16/04 for deep wells.

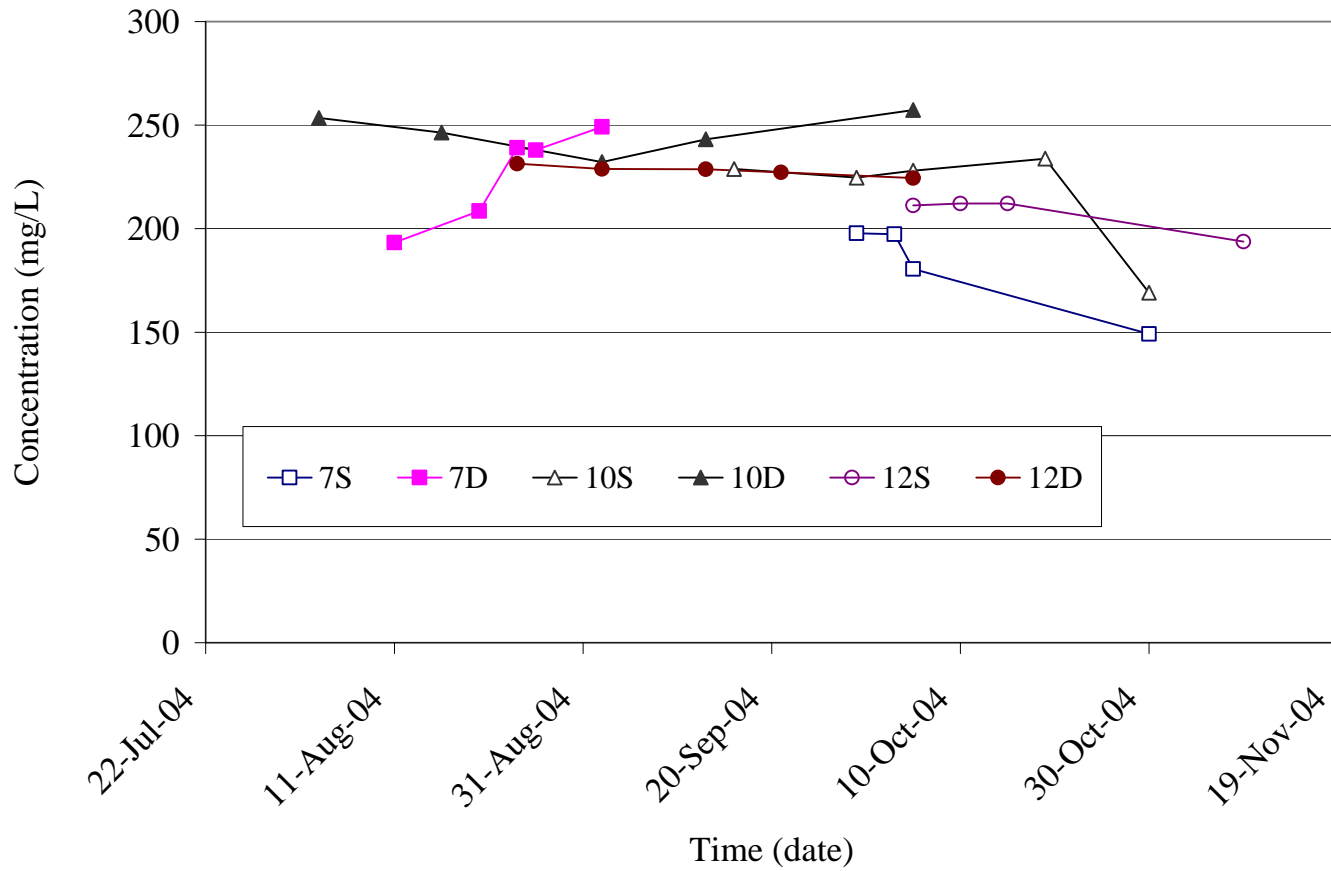


Figure S. 4. 12. Sulfate concentrations at the middle depth samples (23 ft bgs) in the shallow and deep wells MW-7, MW-10 and MW-12; Data from tracer study 2004, day 0 is 9/15/04 for shallow wells and day 0 is 8/16/04 for deep wells.

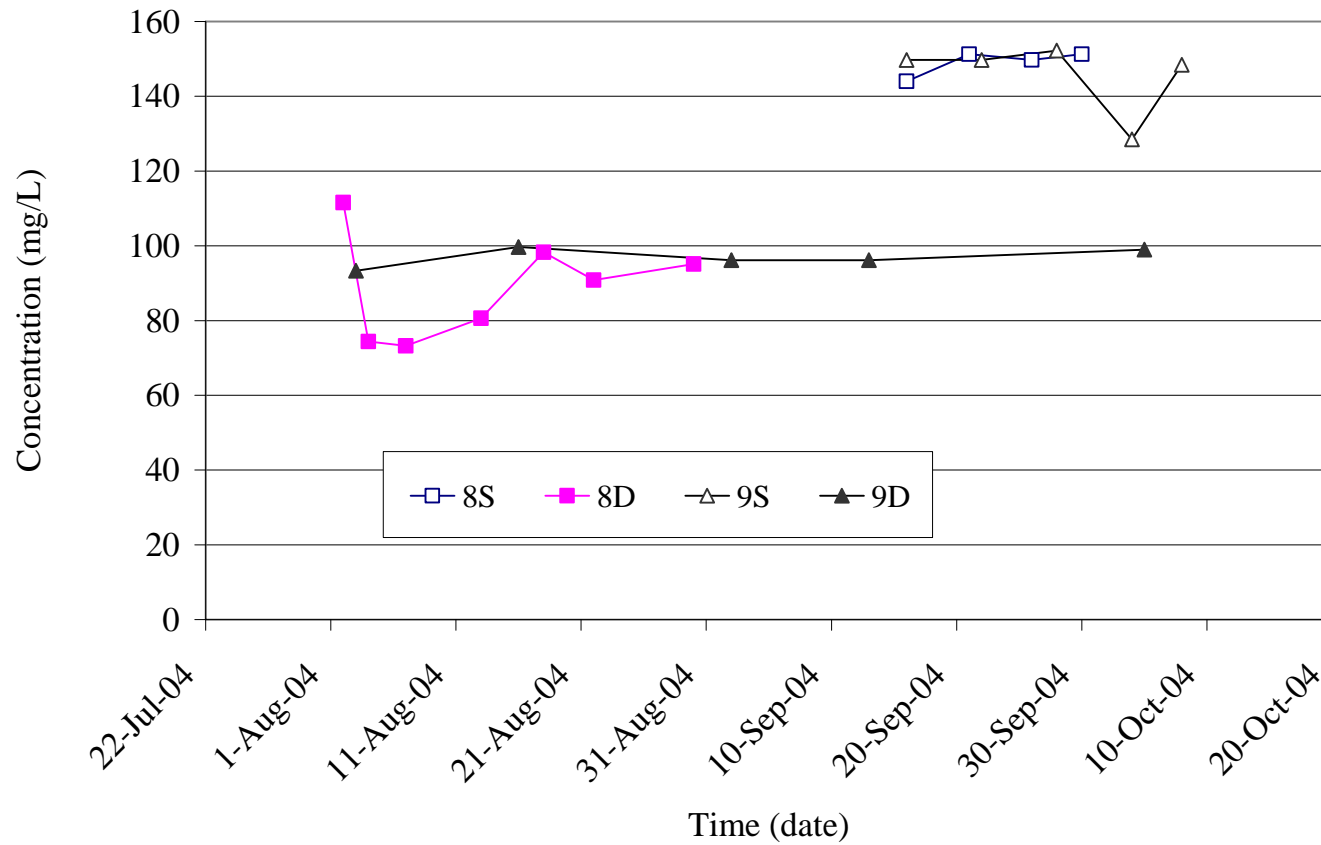


Figure S. 4. 13. Chloride concentrations at the middle depth samples (23 ft bgs) in the shallow and deep wells MW-8 and MW-9; Data from tracer study 2004, day 0 is 9/15/04 for shallow wells and day 0 is 8/16/04 for deep wells.

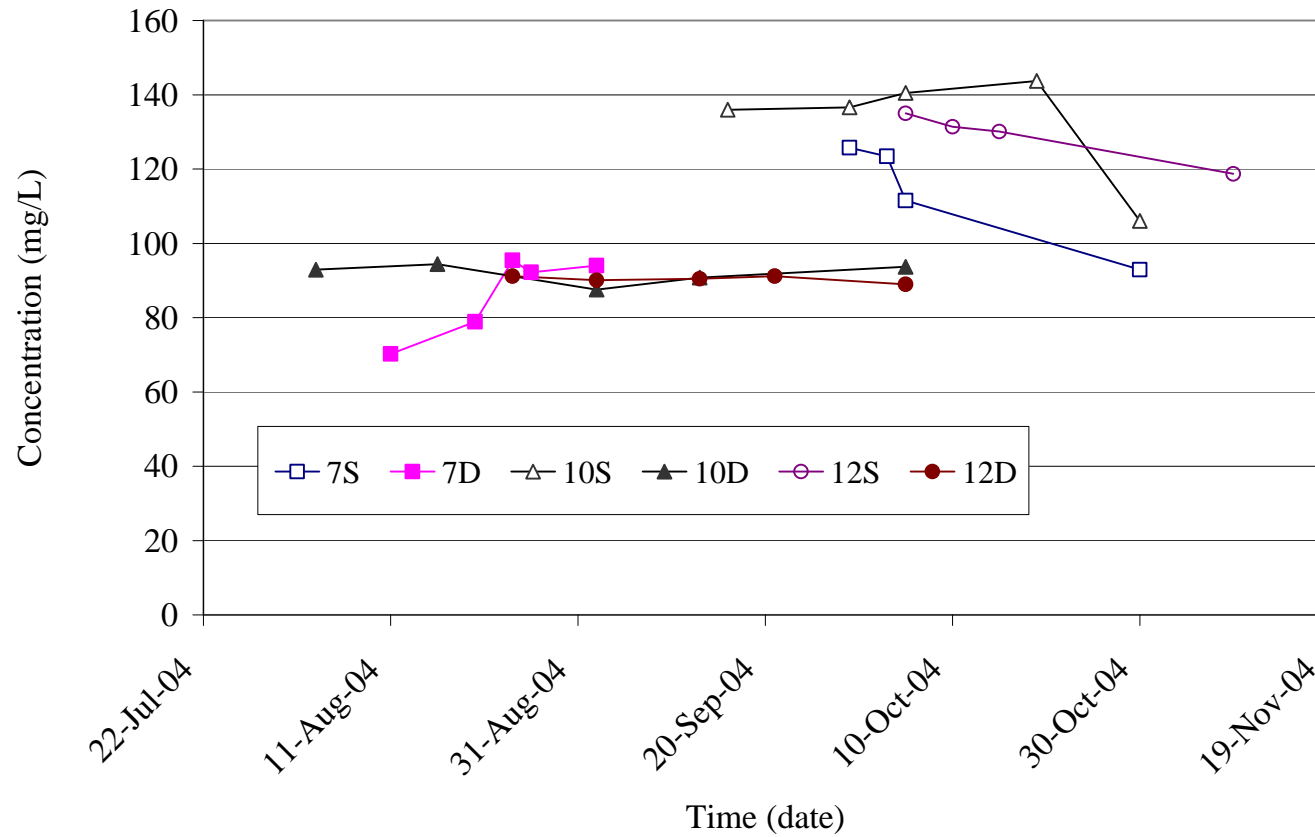


Figure S. 4. 14. Chloride concentrations at the middle depth samples (23 ft bgs) in the shallow and deep wells MW-7, MW-10 and MW-12; Data from tracer study 2004, day 0 is 9/15/04 for shallow wells and day 0 is 8/16/04 for deep wells.

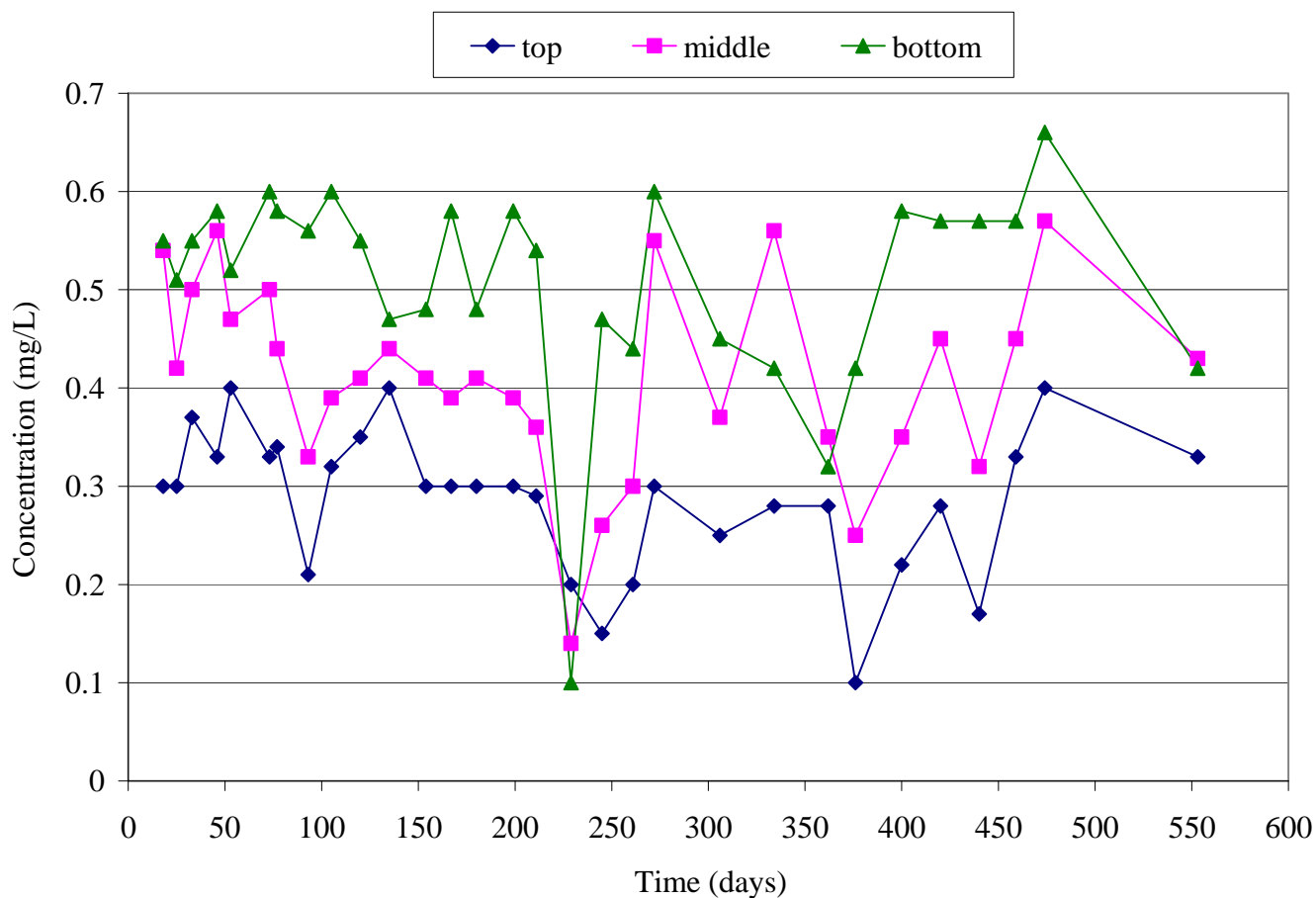


Figure S. 4. 15. Bromide concentrations in MW-5D (~ 110 ft up-gradient from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005) (Injected bromide concentration = 670 mg/L); injection of nutrients and KB-1 on day 56 (Oct 13, 2005); injection of nutrients on day 197 (Mar 3, 2006) (Injected bromide concentration = 1340 mg/L); and injection of nutrients on day 348 (Aug 1, 2006).

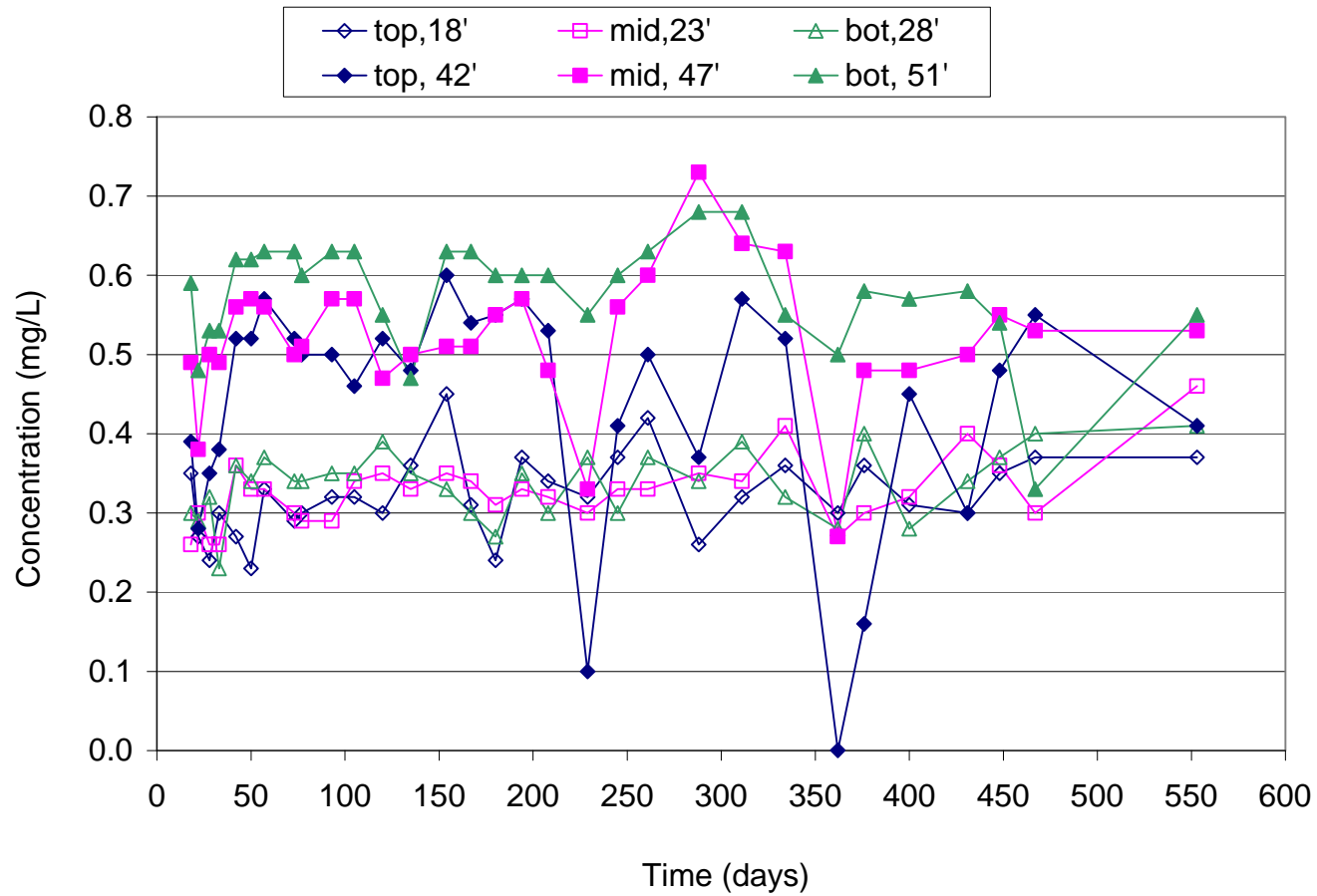


Figure S. 4. 16. Bromide concentrations in MW-7S (open symbols) and MW-7D (filled symbols), approximately 20 ft north from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005) (Injected bromide concentration = 670 mg/L); injection of nutrients and KB-1 on day 56 (Oct 13, 2005); injection of nutrients on day 197 (Mar 3, 2006) (Injected bromide concentration = 1340 mg/L); and injection of nutrients on day 348 (Aug 1, 2006).

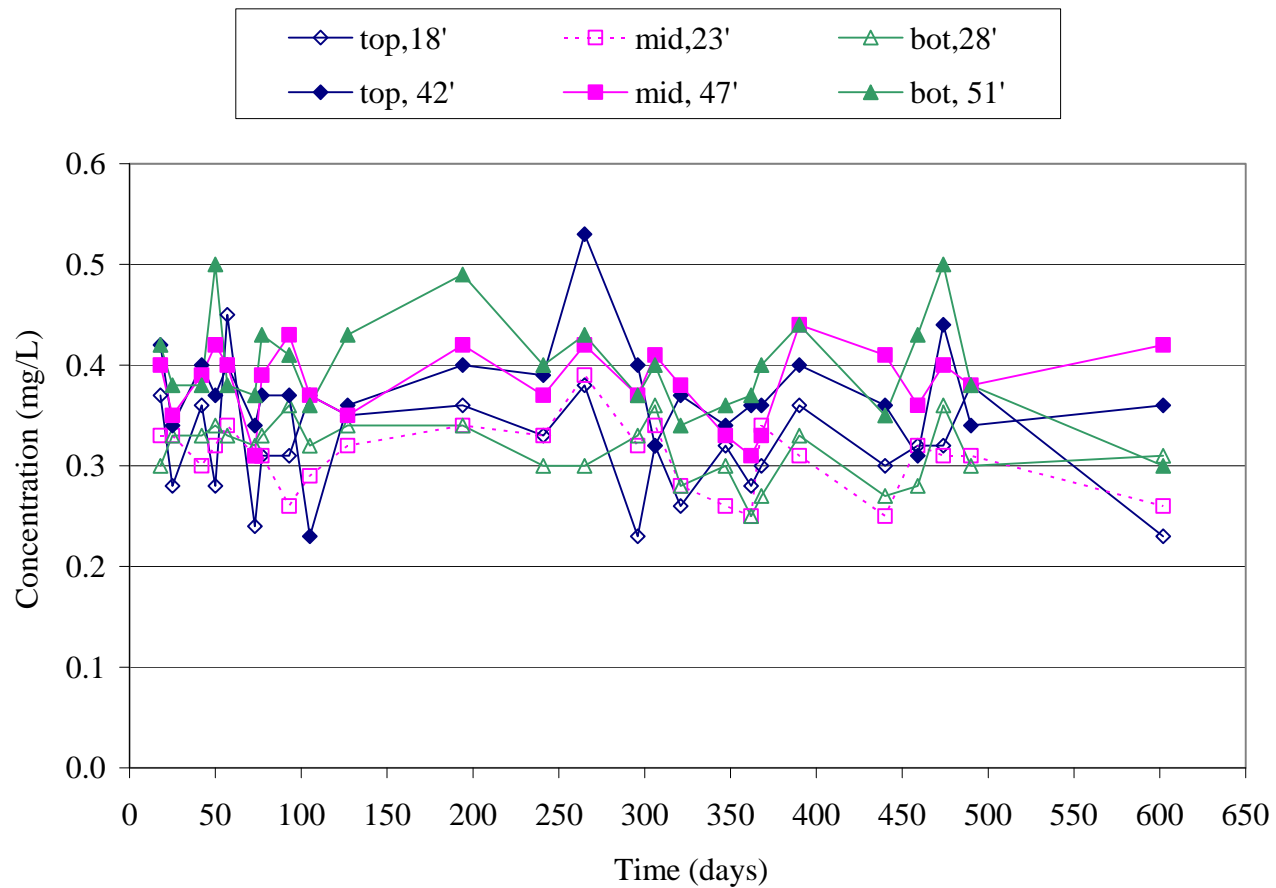


Figure S. 4. 17. Bromide concentrations in MW-11S (open symbols) and MW-11D (filled symbols), approximately 20 ft south from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005) (Injected bromide concentration = 670 mg/L); injection of nutrients and KB-1 on day 56 (Oct 13, 2005); injection of nutrients on day 197 (Mar 3, 2006) (Injected bromide concentration = 1340 mg/L); and injection of nutrients on day 348 (Aug 1, 2006).

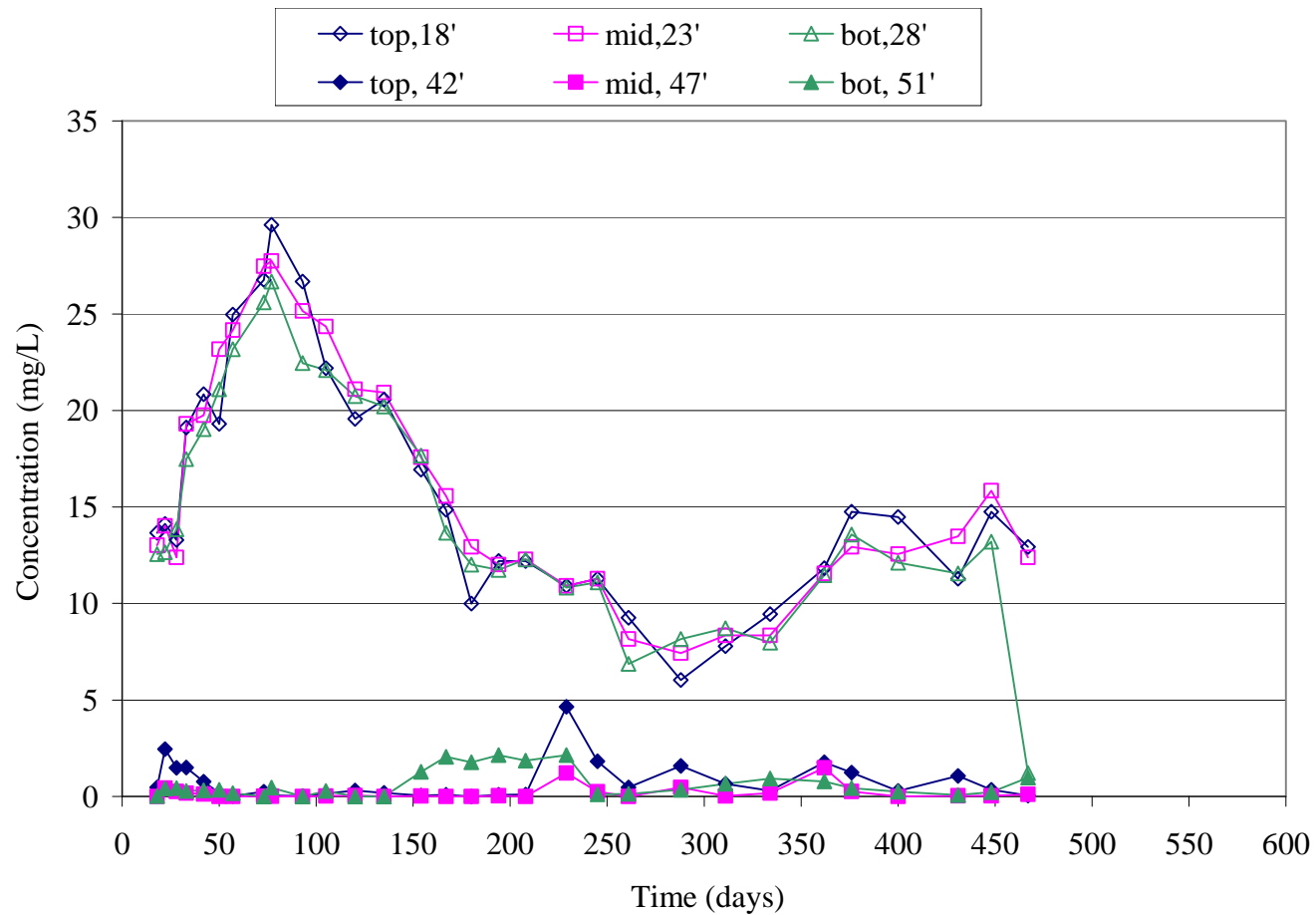


Figure S. 4. 18. Nitrate concentrations in MW-7S (open symbols) and MW-7D (filled symbols), approximately 20 ft north from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).

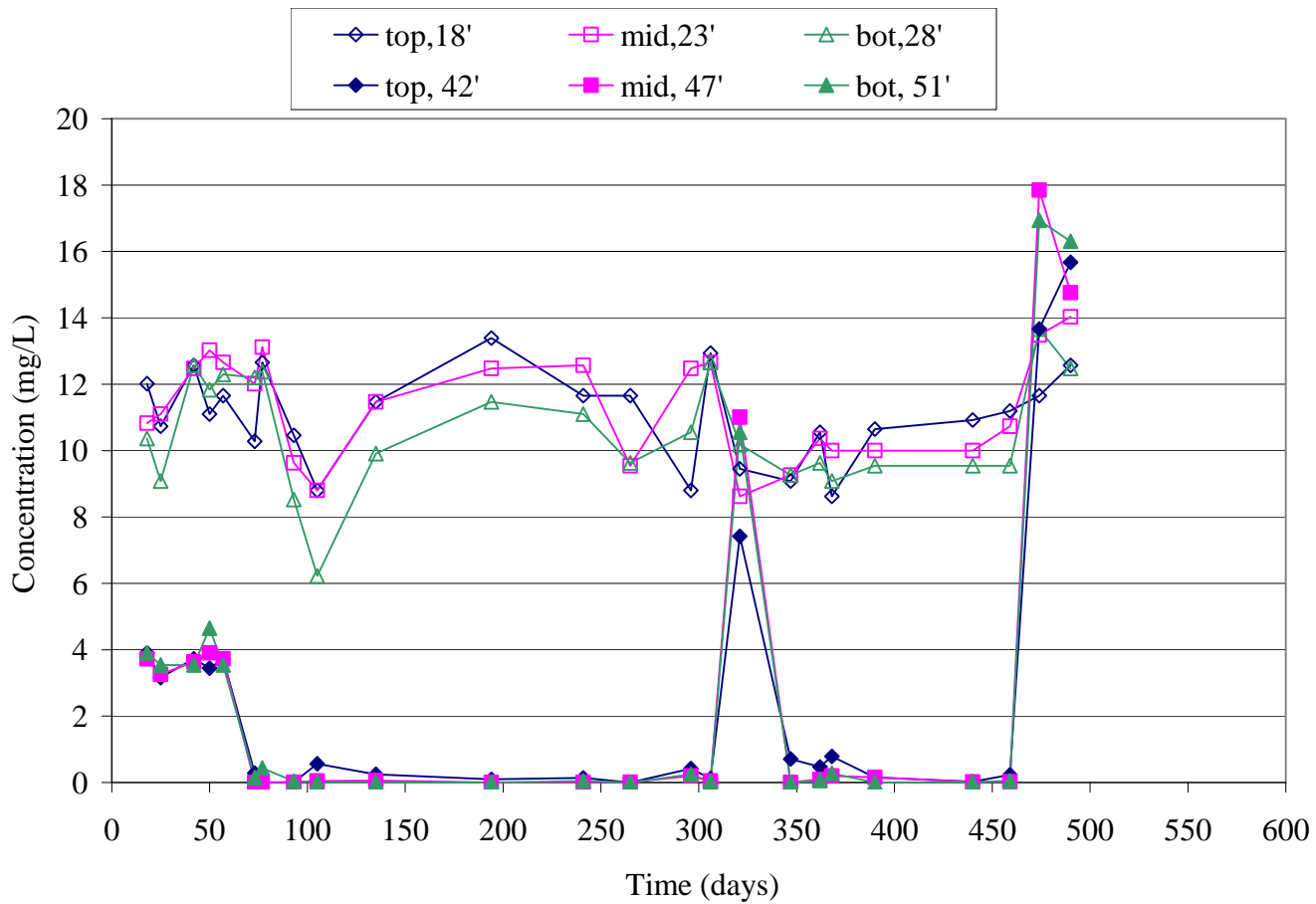


Figure S. 4. 19. Nitrate concentrations in MW-11S (open symbols) and MW-11D (filled symbols), approximately 20 ft south from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).

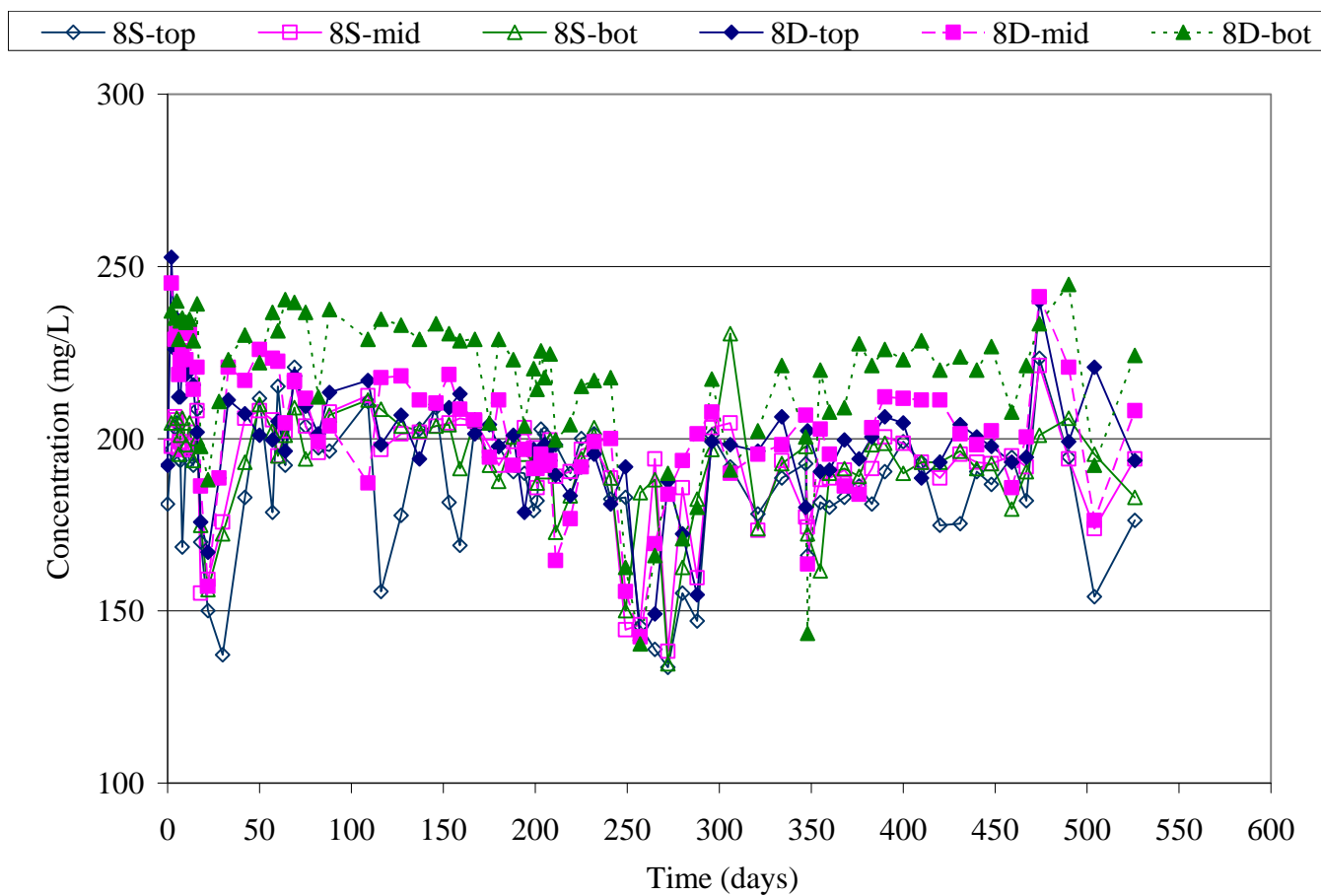


Figure S. 4. 20. Sulfate concentrations in MW-8S (open symbols) and MW-8D (filled symbols), approximately 5 ft upgradient from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).

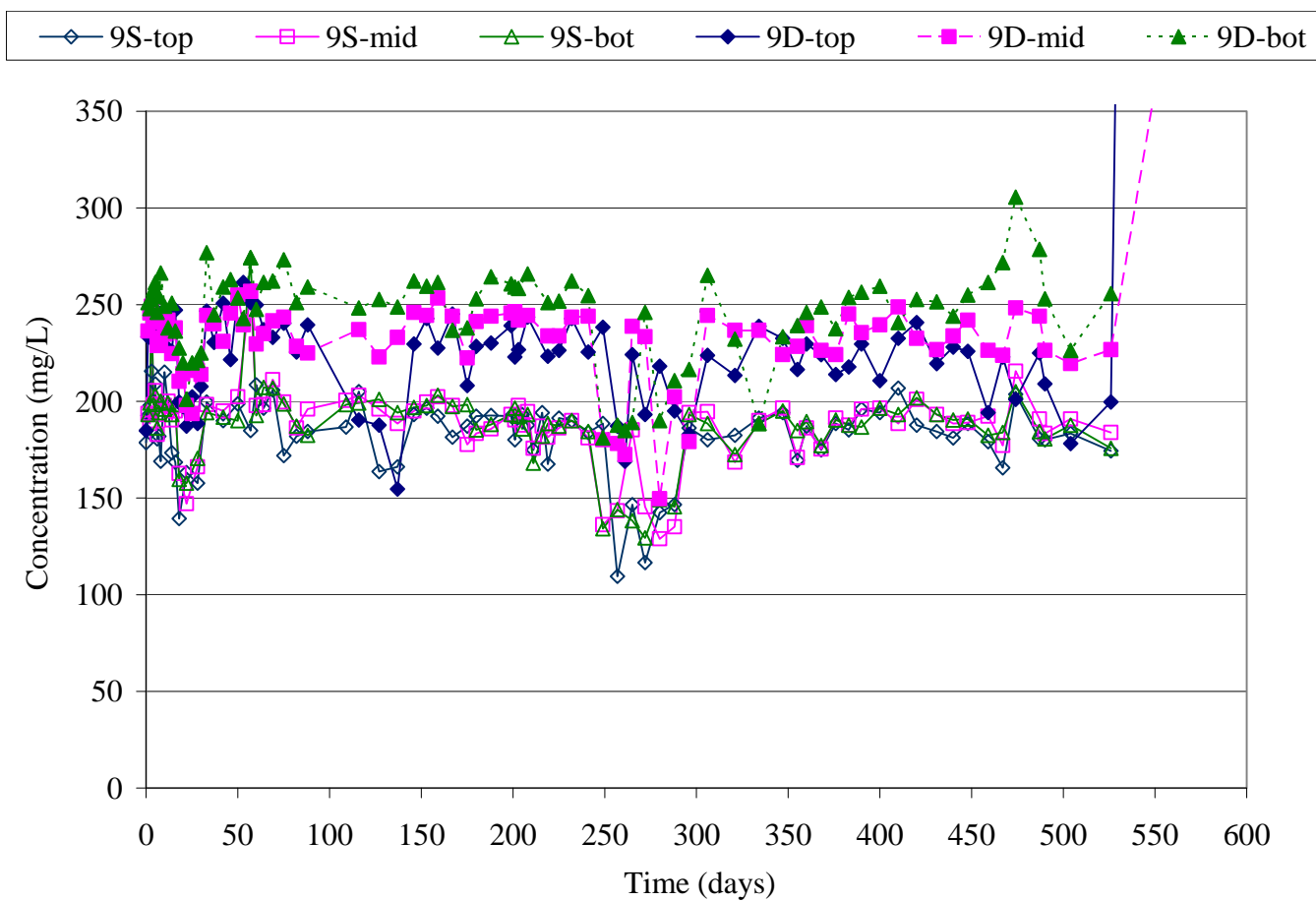


Figure S. 4. 21. Sulfate concentrations in MW-9S (open symbols) and MW-9D (filled symbols), approximately 5 ft down-gradient from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).

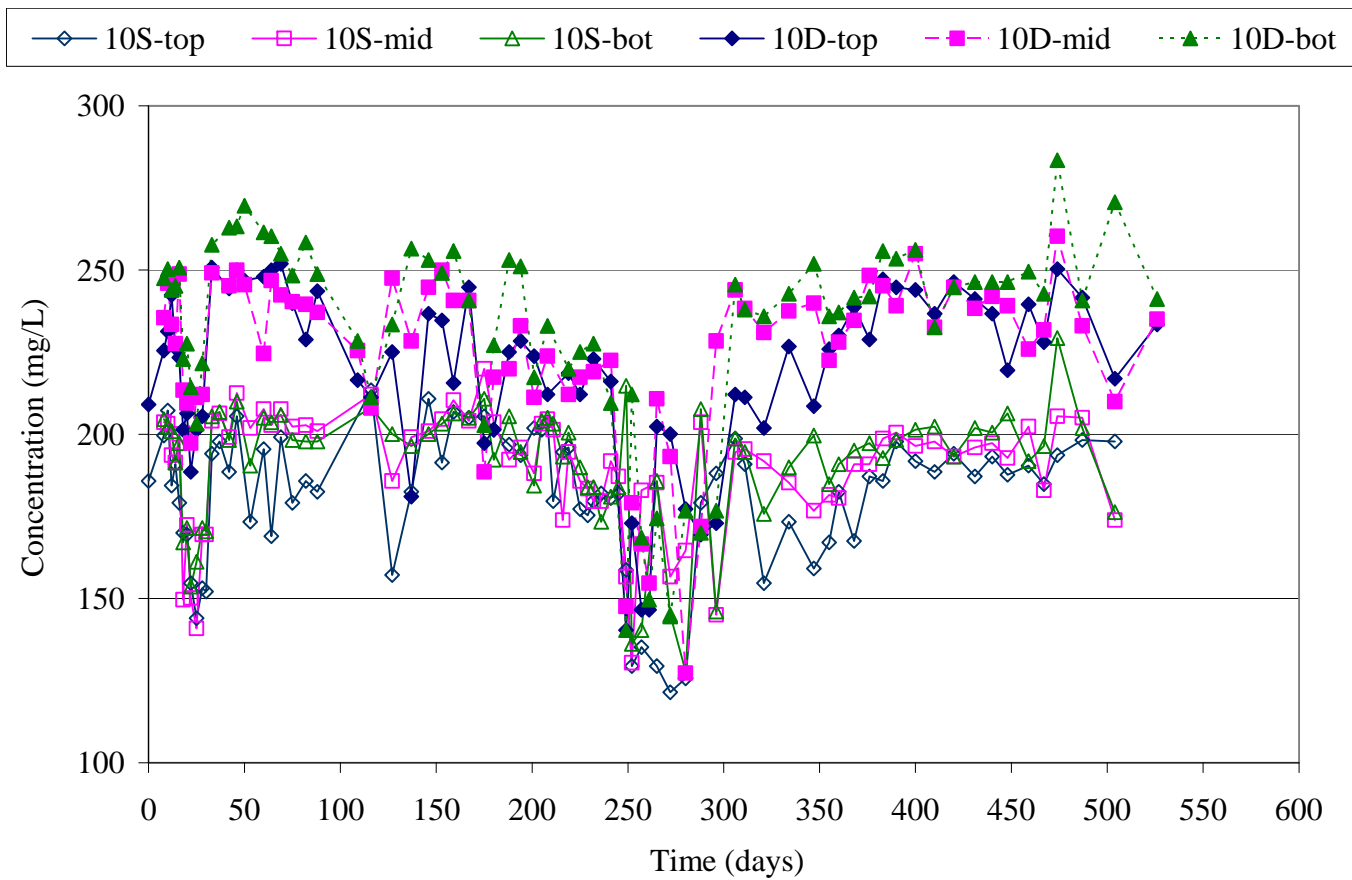


Figure S. 4. 22. Sulfate concentrations in MW-10S (open symbols) and MW-10D (filled symbols), approximately 15 ft down-gradient from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).

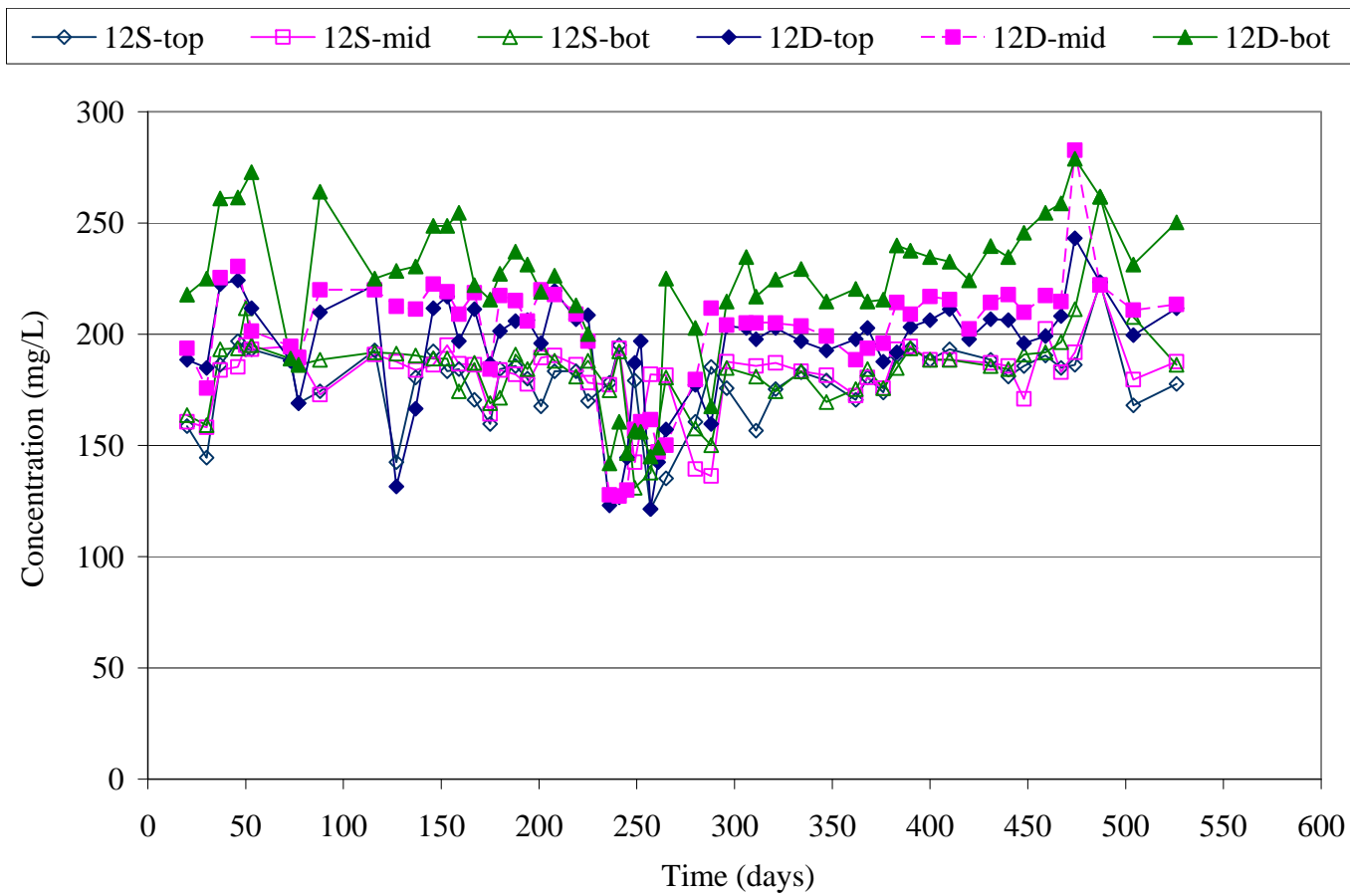


Figure S. 4. 23. Sulfate concentrations in MW-12S (open symbols) and MW-12D (filled symbols), approximately 75 ft down-gradient from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).

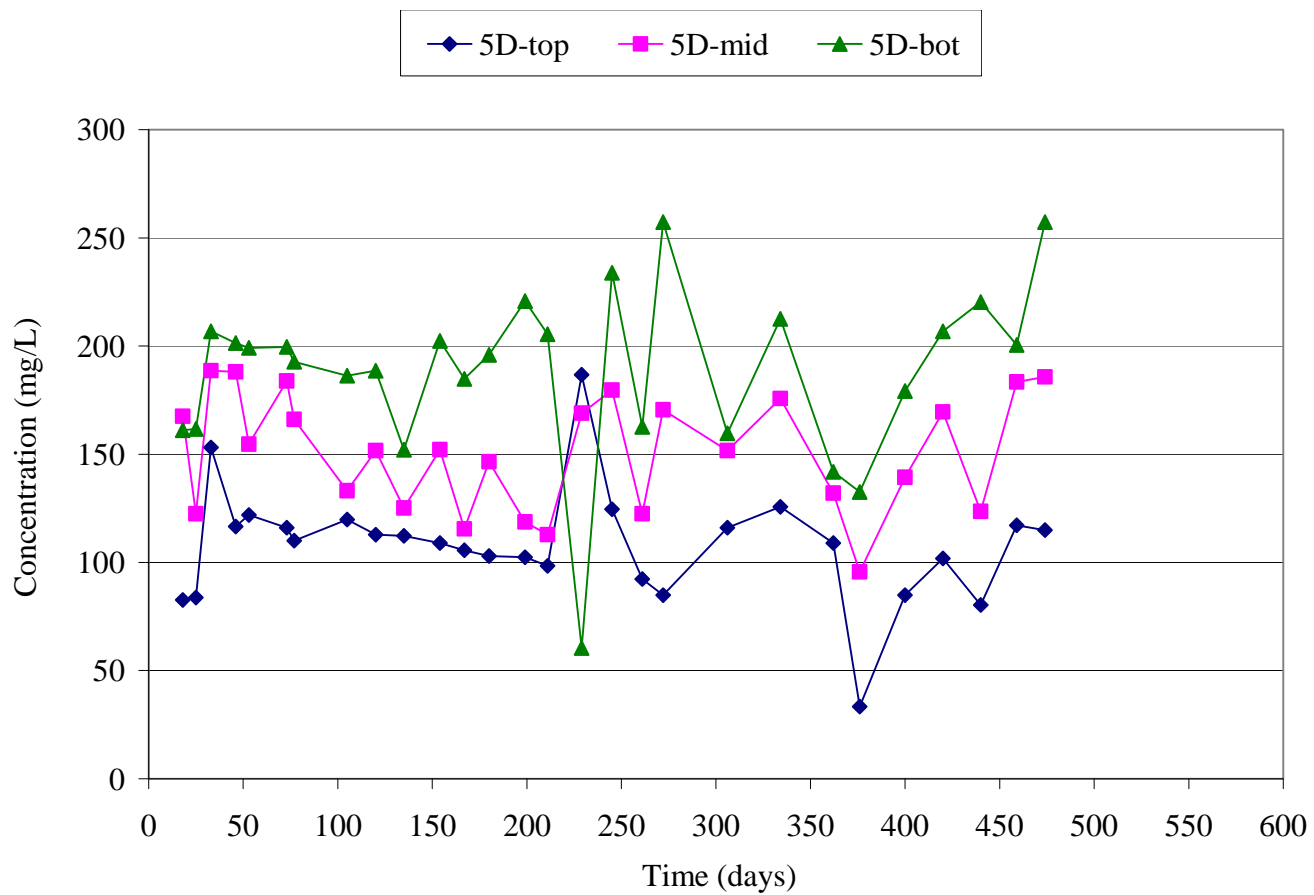


Figure S. 4. 24. Sulfate concentrations in MW-5D, approximately 110 ft up-gradient from injection location. Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).

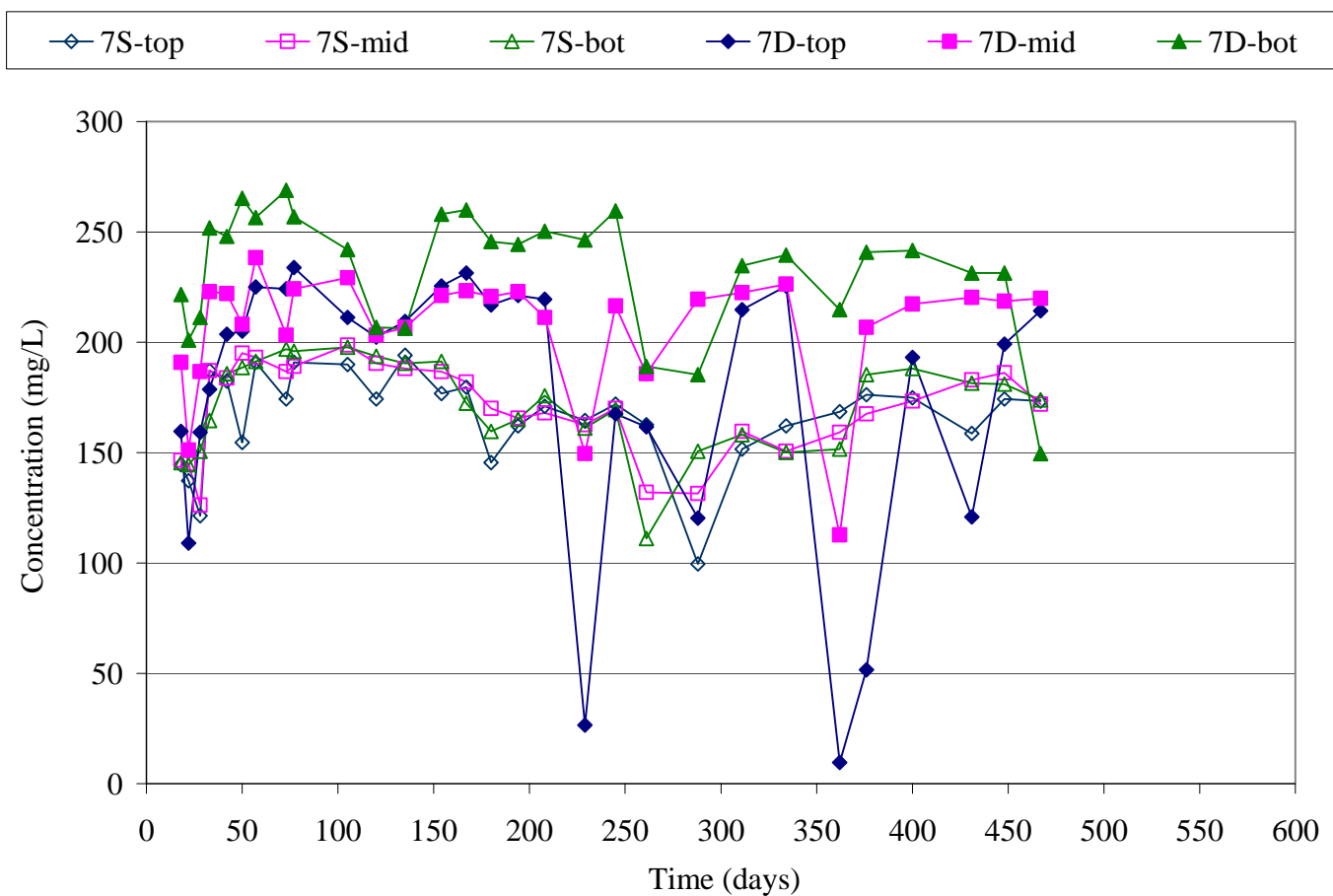


Figure S. 4. 25. Sulfate concentrations in MW-7S (open symbols) and MW-7D (filled symbols), approximately 20 ft north from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).

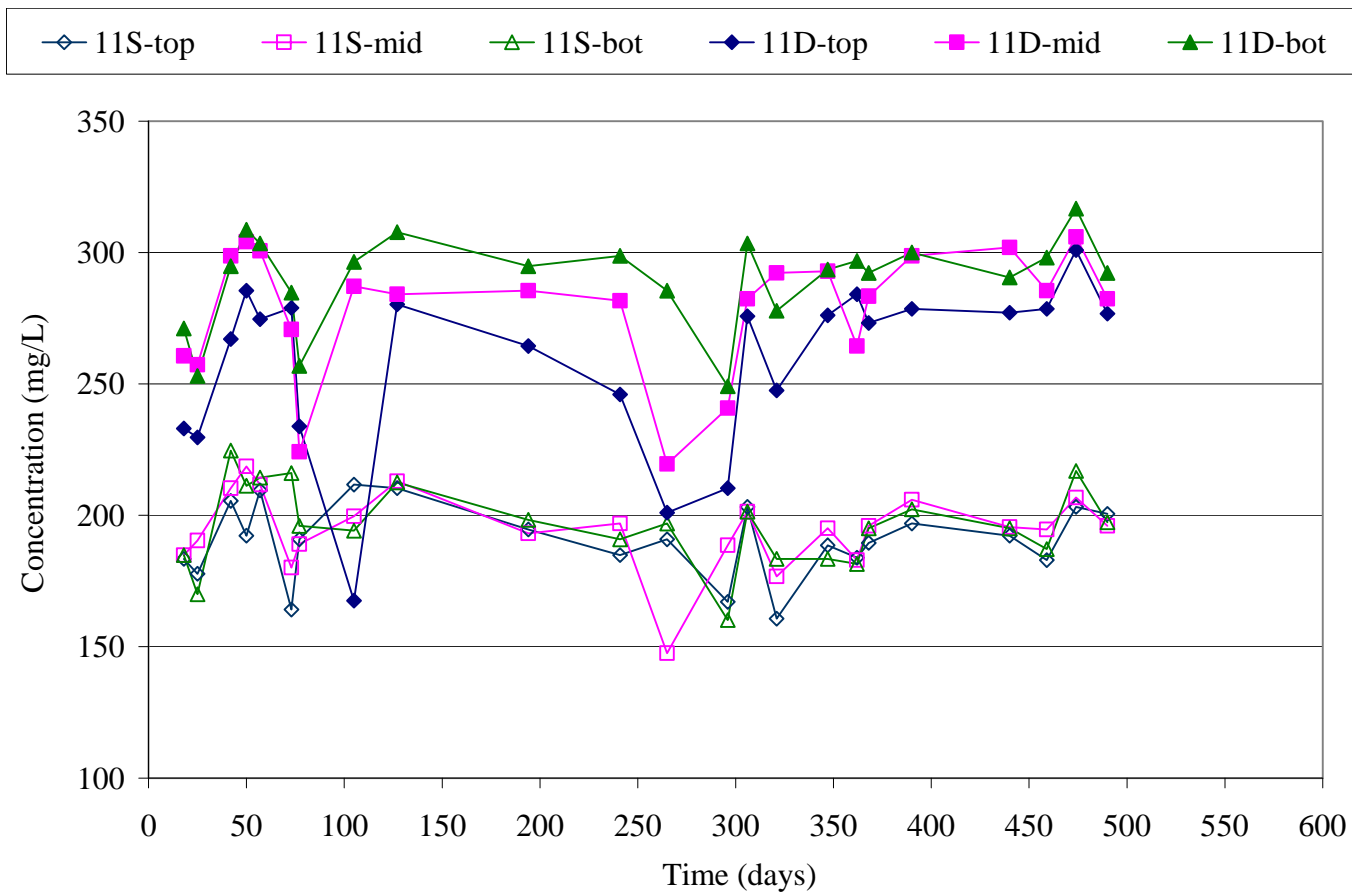


Figure S. 4. 26. Sulfate concentrations in MW-11S (open symbols) and MW-11D (filled symbols), approximately 20 ft south from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).

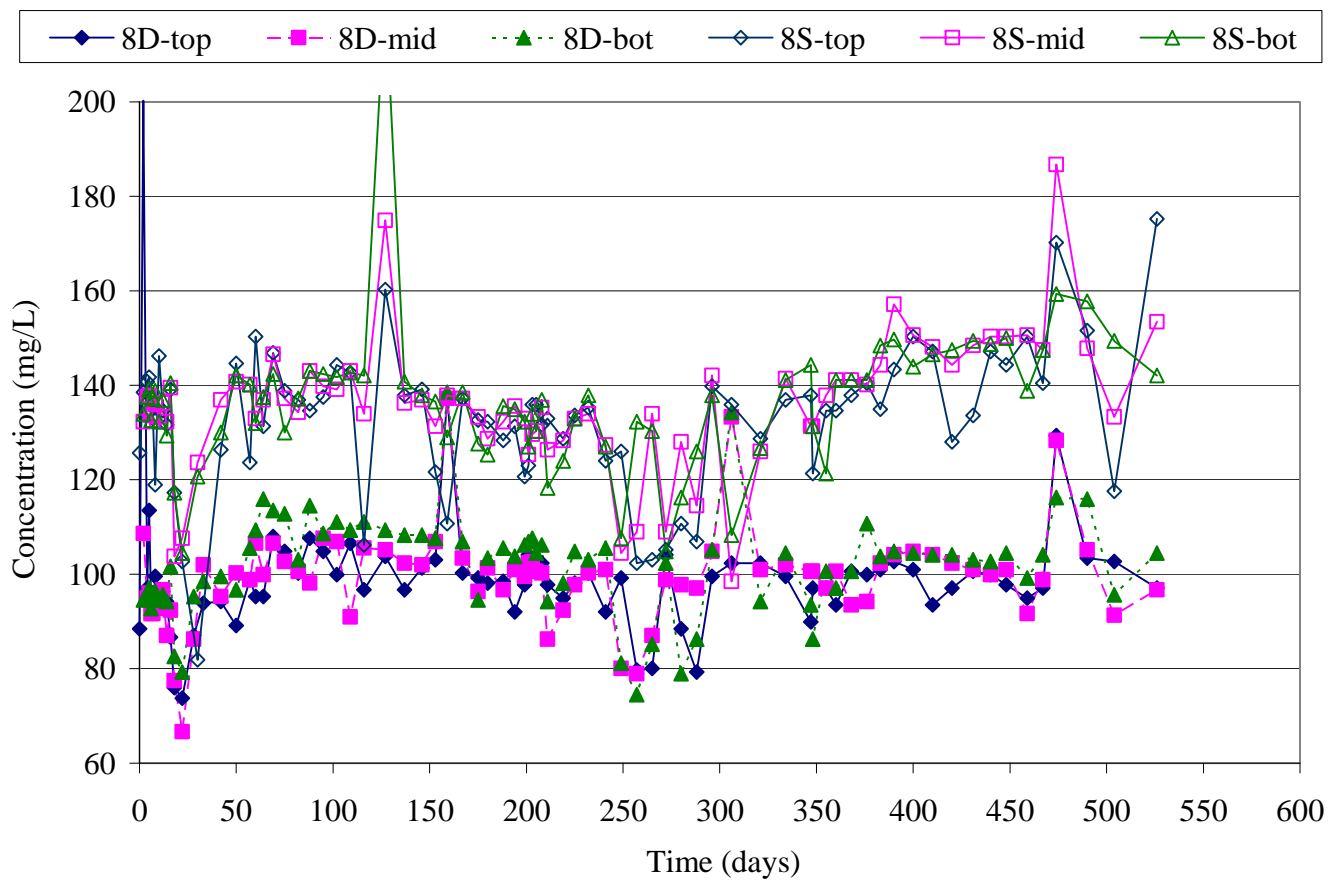


Figure S. 4. 27. Chloride concentrations in MW-8S (open symbols) and MW-8D (filled symbols), approximately 5 ft up-gradient from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).

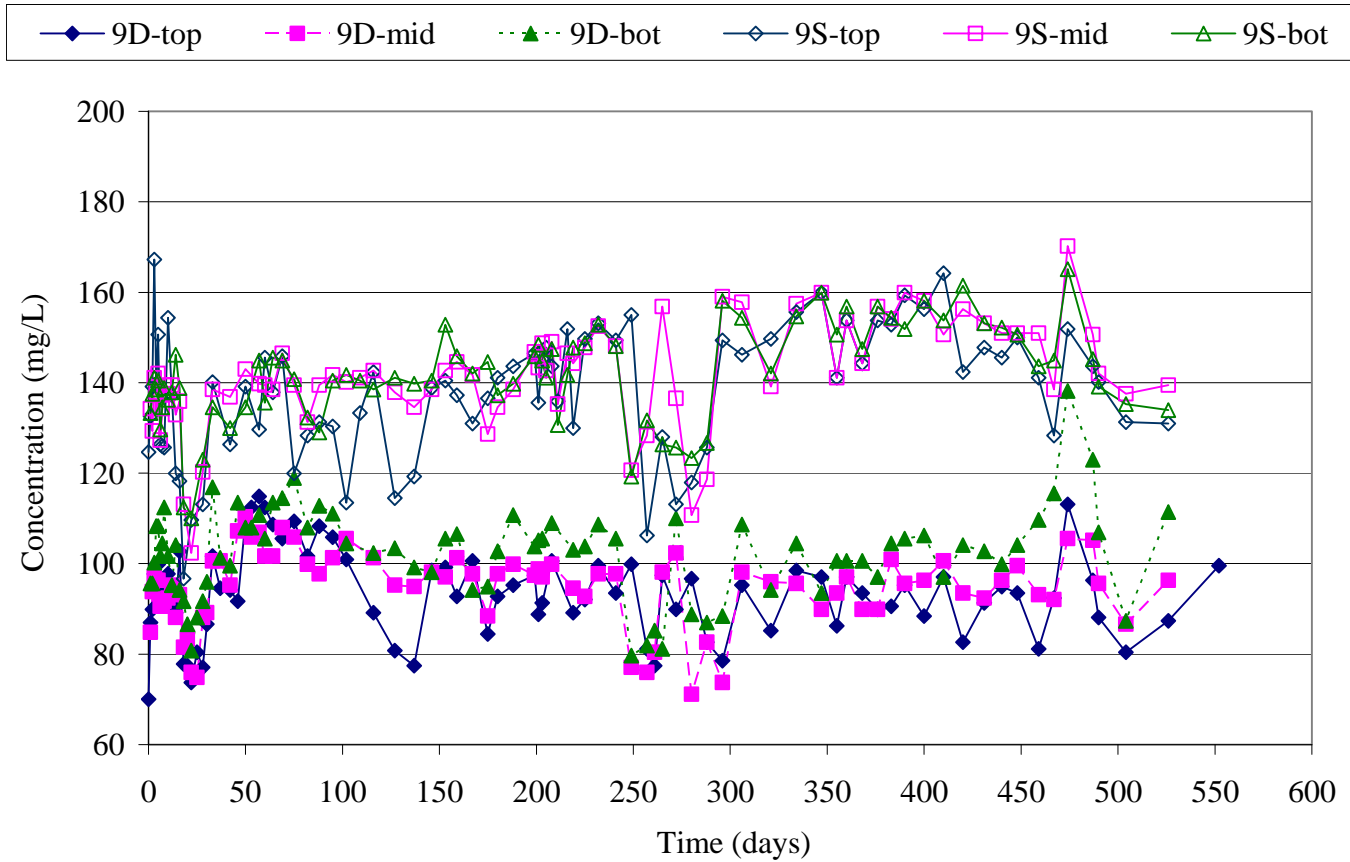


Figure S. 4. 28. Chloride concentrations in MW-9S (open symbols) and MW-9D (filled symbols), approximately 5 ft down-gradient from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).

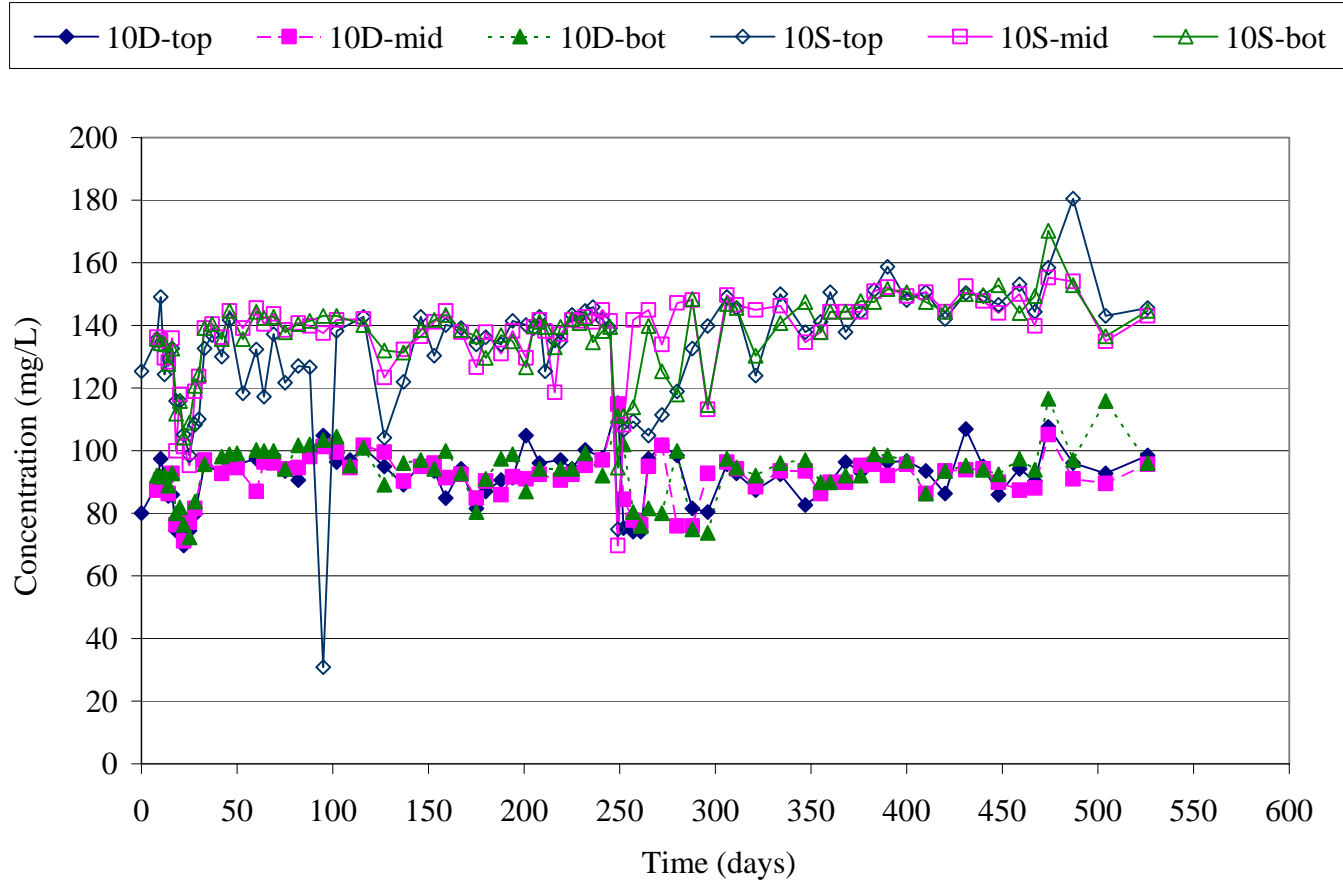


Figure S. 4. 29. Chloride concentrations in MW-10S (open symbols) and MW-10D (filled symbols), approximately 15 ft down-gradient from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).

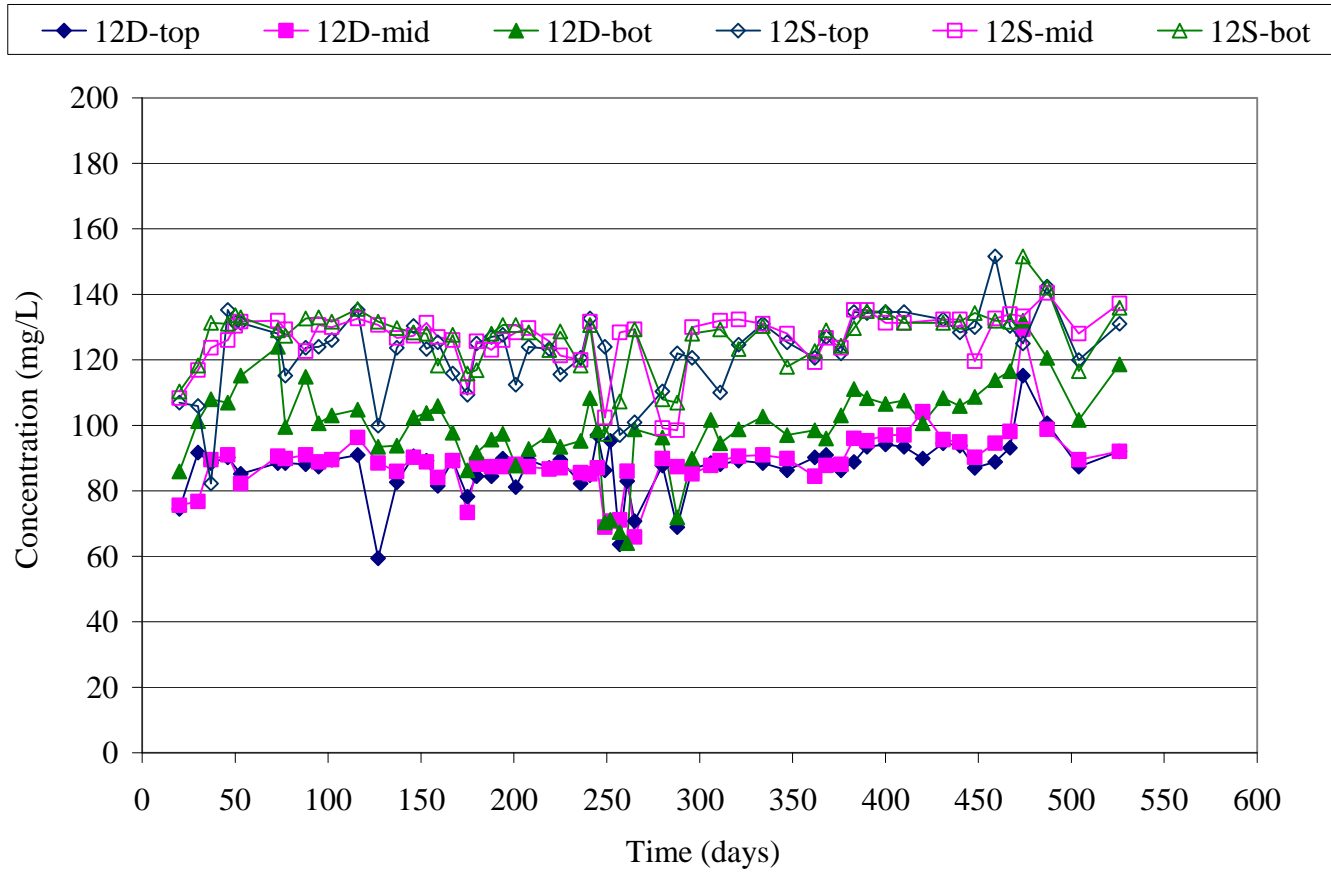


Figure S. 4. 30. Chloride concentrations in MW-12S (open symbols) and MW-12D (filled symbols), approximately 75 ft down-gradient from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).

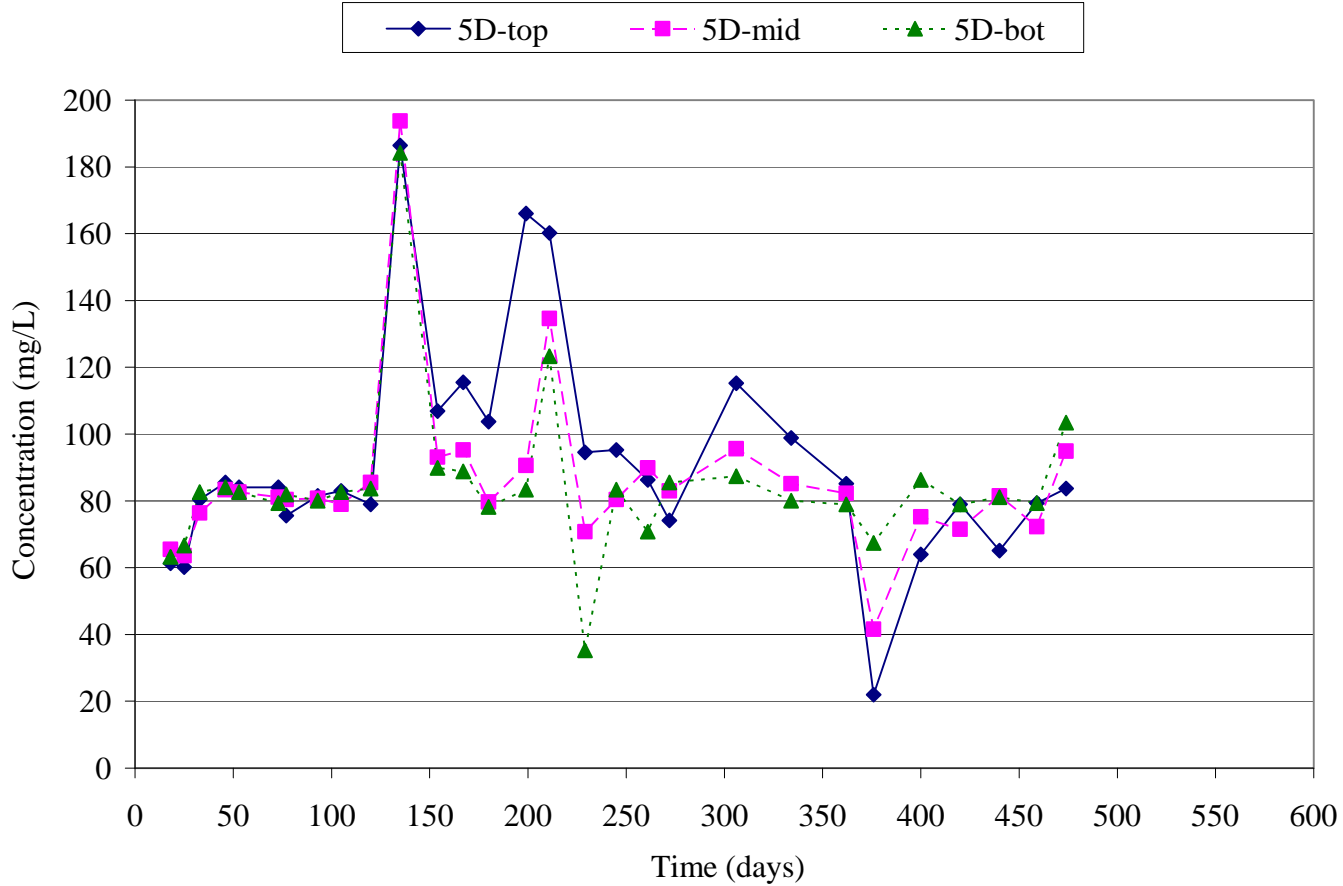


Figure S. 4. 31. Chloride concentrations in MW-5D, approximately 110 ft up-gradient from injection location. Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).

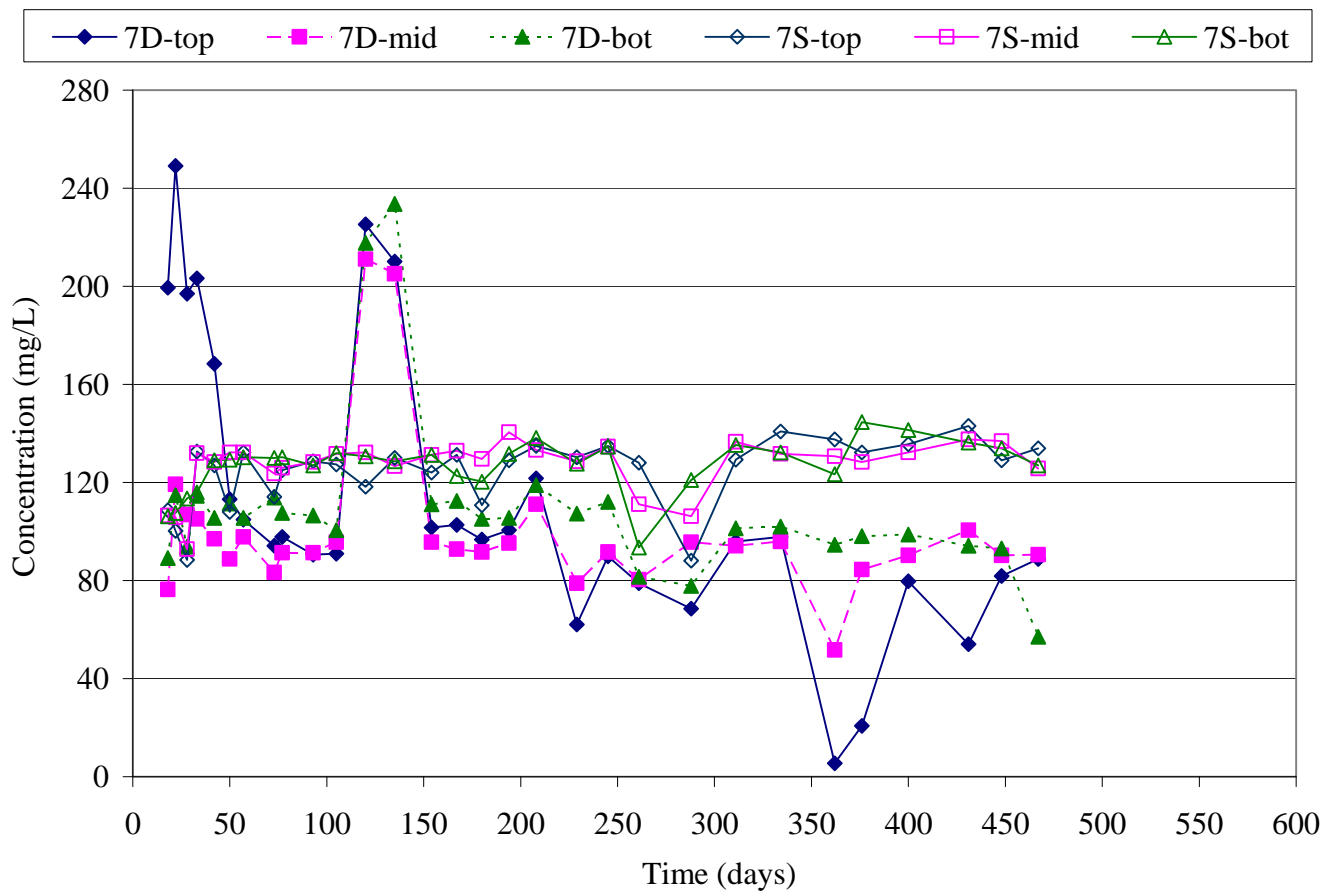


Figure S. 4. 32. Chloride concentrations in MW-7S (open symbols) and MW-7D (filled symbols), approximately 20 ft north from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).

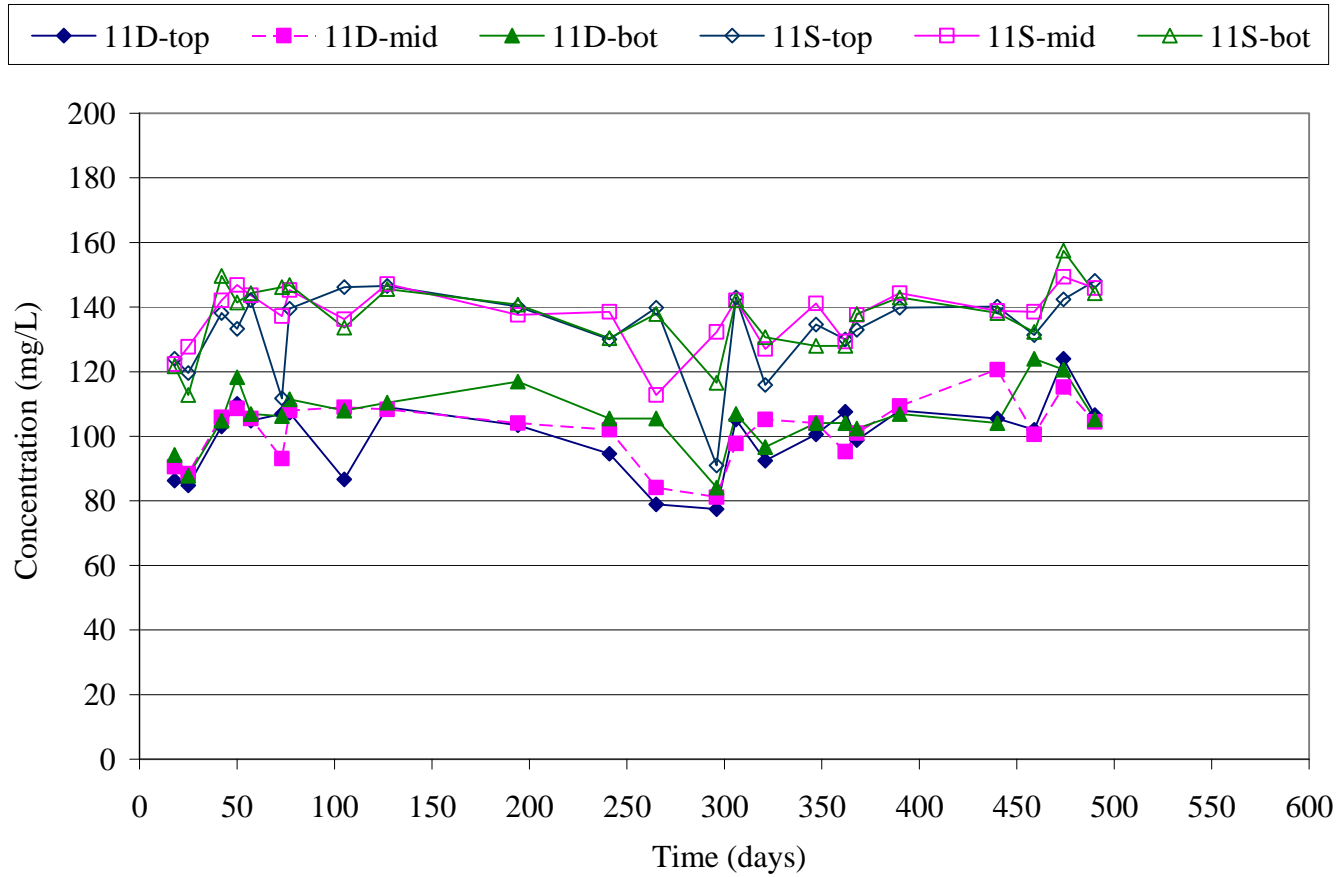


Figure S. 4. 33. Chloride concentrations in MW-11S (open symbols) and MW-11D (filled symbols), approximately 20 ft south from injection location). Injection of nutrients between MW-8 and MW-9 on day 0 (Aug 18, 2005), on day 56 (Oct 13, 2005), on day 197 (Mar 3, 2006), and on day 348 (Aug 1, 2006).

Table S. 4. 1. Concentrations (mg/L) of anions in the mid-campus creek water*.

Date	Chloride	Bromide	Nitrate	Sulfate
10/30/04	70	0.01	8.25	36
11/21/04	103	0.01	18.00	73
7/19/05	25	0.01	4.54	17

*The mid-campus creek flows through the Kansas State University campus and exits at the east side of the campus at North Manhattan Avenue and Bertrand Street. The creek water flows into storm sewer which goes south up to the Bluemont Avenue and then turns east. Some of this water is suspected to leak or drain into the shallow aquifer in the pilot study area.

Table S. 4. 2. Concentrations (mg/L) of anions in MW-8D. Nitrate concentrations were low (less than 0.1 mg/L) in the deep zone. Bioremediation pilot study was started on August 18, 2005, day 0.

Time (Days)	Chloride			Bromide			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot
0	88	SNC	SNC	3.6	SNC	SNC	192		
2	200	109	95	1.3	5.4	5.3	253	245	237
4	97	95	96	3.7	4.2	3.8	226	229	235
5	113	96	97	3.3	3.5	2.7	235	231	240
6	95	92	93	3.1	3.1	2.5	212	219	229
7	92	92	96	2.4	2.4	2.1	212	223	234
8	100	93	96	2.3	2.1	1.9	222	225	235
10	97	93	95	2.0	1.8	1.6	219	223	234
12	96	97	96	2.2	1.8	1.5	220	231	235
14	94	87	94	2.1	1.5	1.6	216	214	228
16	87	92	102	1.8	1.7	1.5	202	221	239
18	76	77	83	1.8	1.7	1.3	176	186	198
22	74	67	79	1.4	1.2	1.2	167	157	188
28	87	86	95	1.5	1.4	1.1	189	189	211
33	94	102	98	1.1	1.4	1.0	211	221	223
42	94	95	100	1.4	1.3	1.2	207	217	230
50	89	100	97	1.3	1.5	1.3	201	226	222
57	99	99	106	1.7	2.1	2.4	200	223	237
60	95	107	109	2.1	2.6	2.5	205	222	231
64	95	100	116	1.9	2.4	2.4	196	205	240
69	108	107	113	2.4	2.5	2.3	218	217	240
75	105	103	113	2.3	2.8	2.4	209	212	237
82	100	101	103	2.4	3.2	2.7	201	199	212

Time (Days)	Chloride			Bromide			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot
88	108	98	115	2.7	2.4	2.4	213	204	238
95	105	108	109	2.3	3.2	2.9	DNA	DNA	DNA
102	100	107	111	2.3	3.0	2.5	DNA	DNA	DNA
109	107	91	109	2.6	2.1	2.7	217	187	229
116	97	106	111	2.2	2.7	2.9	198	218	235
127	104	105	109	2.4	2.9	2.7	207	218	233
137	97	102	108	2.0	2.8	3.1	194	211	229
146	101	102	108	2.5	3.0	2.7	210	210	233
153	103	107	108	3.0	3.3	2.7	209	219	231
159	137	137	139	3.7	3.3	3.1	213	209	228
167	100	103	107	2.9	3.5	2.8	201	205	229
175	99	96	95	2.6	2.8	2.1	204	195	205
180	98	101	103	2.6	3.1	2.2	198	211	229
188	98	97	106	2.9	3.1	2.6	201	192	223
194	92	101	104	2.2	3.1	3.3	179	197	204
199	98	100	106	2.8	3.6	3.1	197	191	220
201	104	102	107	3.5	3.3	2.7	192	191	214
203	102	103	108	2.9	3.0	2.4	196	195	225
205	101	101	104	2.7	2.9	2.3	198	192	218
208	102	100	106	2.7	2.4	2.0	197	194	225
211	98	86	94	2.5	2.7	2.0	189	165	200
219	95	92	98	2.5	2.8	2.3	183	177	204
225	98	98	105	2.2	3.0	2.5	192	192	215
232	100	100	103	2.4	2.7	2.1	195	199	217
241	92	101	106	2.4	2.7	2.5	181	200	218
249	99	80	81	2.9	2.2	1.8	192	156	163
257	80	79	74	2.2	2.6	1.8	141	142	140

Time (Days)	Chloride			Bromide			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot
265	80	87	85	2.8	3.2	2.8	149	170	166
272	104	99	102	3.6	3.7	3.5	188	184	190
280	88	98	79	2.5	3.2	2.1	172	194	171
288	79	97	86	2.4	2.5	2.0	155	201	180
296	100	105	105	2.5	2.7	2.3	199	208	217
306	102	133	134	2.9	2.2	2.1	198	190	191
321	102	101	94	2.2	2.6	1.8	196	195	202
334	100	102	104	2.3	2.5	2.1	206	198	221
347	90	101	93	2.7	2.7	2.0	180	207	201
348	97	101	86	2.5	5.6	4.9	202	164	143
355	97	97	101	3.0	2.1	1.8	190	203	220
360	93	101	97	2.2	3.1	2.2	191	195	208
368	101	93	101	2.8	2.7	2.4	200	186	209
376	100	94	111	2.5	2.9	2.5	194	184	228
383	101	102	104	2.8	2.9	2.5	201	203	221
390	103	104	105	2.8	2.9	2.5	206	212	226
400	101	105	104	2.7	3.4	2.7	205	212	223
410	93	104	104	2.9	3.4	2.6	189	211	228
420	97	102	104	2.9	3.2	3.0	193	211	220
431	101	101	103	3.4	3.8	2.6	204	201	224
440	100	100	103	3.2	3.7	2.6	201	198	220
448	98	101	104	3.1	3.5	2.5	198	202	227
459	95	92	99	3.0	3.4	3.2	193	186	208
467	97	99	104	3.4	3.7	3.3	195	201	221
474	129	128	116	3.6	4.7	3.7	240	241	233
490	103	105	116	3.7	3.0	2.7	199	221	245
504	103	91	96	2.0	4.1	3.9	221	176	192

Time (Days)	Chloride			Bromide			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot
526	97	97	104	3.4	3.2	2.8	194	208	224
553				3.8	3.0	2.7			
573				3.5	4.1	3.4			
602				3.6	3.5	3.7			

SNC: Sample not collected

DNA: Data not available

Table S. 4. 3. Concentrations (mg/L) of anions in MW-9D. Nitrate concentrations were low (less than 0.1 mg/L) in the deep zone. Bioremediation pilot study was started on August 18, 2005, day 0.

Time (Days)	Chloride			Bromide			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot
0	70			0.65			185		
1	87	85	96	0.55	0.43	0.53	233	236	251
2	90	94	96	0.50	0.52	0.52	233	246	248
3	98	97	100	0.61	0.57	0.60	246	249	253
4	100	96	108	0.67	0.59	0.60	246	244	258
5	100	96	108	0.66	0.67	0.62	248	241	261
6	92	91	102	0.57	0.59	0.52	235	229	246
7	92	91	104	0.53	0.50	0.54	231	233	254
8	94	92	112	0.56	0.56	0.58	235	231	266
10	98	92	102	0.53	0.50	0.53	233	235	249
12	91	95	95	0.70	0.65	0.66	227	242	238
14	89	88	104	0.66	0.72	0.70	226	225	251
16	103	93	94	0.66	0.77	0.72	247	238	236
18	78	82	92	0.70	0.82	0.72	200	210	228
20	77	83	87	0.70	0.87	0.80	197	214	220
22	74	76	81	0.72	1.00	0.70	187	198	201
25	80	75	88	0.92	1.09	0.90	202	194	220
28	77	88	92	0.78	1.31	0.95	189	216	221
30	87	89	96	1.21	1.44	0.84	208	214	225
33	102	101	117	1.17	1.32	0.82	247	244	277
37	95	101	101	1.18	1.44	1.02	231	240	245
42	94	95	100	1.54	1.75	0.86	251	231	259
46	92	107	113	1.23	1.80	1.11	222	246	263

Time (Days)	Chloride			Bromide			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot
50	110	110	108	1.42	1.51	0.80	254	255	253
53	112	106	108	0.92	1.70	2.03	261	240	243
57	115	107	111	1.42	1.86	1.33	251	257	274
60	112	102	106	1.80	1.73	1.16	250	230	248
64	109	102	113	1.35	1.51	1.31	237	235	261
69	106	108	115	1.40	1.50	1.09	233	242	262
75	109	106	119	1.35	1.27	0.74	240	244	273
82	102	100	108	1.29	1.13	0.75	225	228	251
88	108	98	113	1.28	1.00	0.77	240	225	259
95	106	101	111	1.10	1.25	0.93			
102	101	106	104	0.95	1.01	0.84			
116	89	101	102	0.77	0.94	0.74	190	237	248
127	81	95	103	0.82	0.97	0.78	188	223	253
137	77	95	99	0.55	0.72	0.64	155	233	249
146	98	98	98	0.79	0.69	0.66	230	246	262
153	99	97	106	0.70	0.64	0.61	243	244	260
159	93	101	107	0.55	0.63	0.65	228	253	261
167	101	98	94	0.66	0.55	0.62	245	244	237
175	84	88	95	0.58	0.50	0.57	208	222	238
180	93	98	103	0.56	0.55	0.64	228	241	253
188	95	100	111	0.64	0.57	0.64	230	244	264
199	97	97	104	0.66	0.80	0.76	239	246	261
201	89	99	105	0.57	0.58	0.58	223	246	259
203	91	97	106	0.56	0.55	0.63	227	242	258
208	101	100	109	0.55	0.61	0.61	244	244	266
219	89	95	103	0.51	0.51	0.58	223	234	251
225	92	93	104	0.54	0.55	0.55	226	234	252

Time (Days)	Chloride			Bromide			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot
232	100	98	109	0.53	0.55	0.60	243	244	262
241	93	98	106	0.53	0.63	0.64	225	244	255
245				0.68	0.66	0.77			
249	100	77	80	0.72	0.55	0.55	238	180	181
257	81	76	82	0.62	0.58	0.74	187	178	188
261	77	80	85	0.59	0.56	0.58	169	172	185
265	97	98	81	0.88	0.84	0.78	224	239	189
272	90	102	110	0.77	1.00	0.96	193	233	246
280	97	71	89	1.10	0.83	0.95	218	150	190
288	83	83	87	0.74	0.76	0.76	195	202	211
296	79	74	88	0.70	0.80	0.77	183	179	216
306	95	98	109	0.73	0.85	0.70	224	244	265
321	85	96	94	0.81	0.81	0.64	213	237	232
334	98	96	104	0.90	1.12	0.75	239	237	189
347	97	90	93	0.95	1.14	0.67	233	224	233
355	86	93	101	1.43	1.04	0.67	216	228	239
360	97	97	101	1.25	1.51	0.81	230	239	246
368	93	90	101	1.16	2.00	0.88	224	226	249
376	90	90	97	0.85	1.62	1.36	214	224	238
383	91	101	104	1.21	1.54	0.81	218	245	254
390	95	96	106	1.53	1.60	0.88	230	235	257
400	88	96	106	0.91	1.71	0.82	211	240	260
410	97	101	97	1.41	1.13	0.82	233	249	241
420	83	93	104	0.96	1.71	0.97	241	233	253
431	91	92	103	1.24	1.78	0.91	219	227	251
440	95	96	100	1.14	1.40	0.84	228	234	244
448	93	100	104	1.31	1.07	0.71	226	242	255

Time (Days)	Chloride			Bromide			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot
459	81	93	110	0.83	1.43	0.75	194	226	261
467	92	92	116	1.46	1.32	0.72	223	224	272
474	113	106	138	1.46	1.21	1.07	201	248	306
487	96	105	123	1.40	1.22	1.12	225	244	279
490	88	96	107	0.96	1.04	0.74	209	226	253
504	80	87	87	0.70	0.80	0.75	178	219	226
526	87	96	111	1.27	1.01	1.11	200	227	256
553				1.22	1.10	1.45			
573				1.30	1.28	2.24			
602				0.98	1.70	2.90			

Table S. 4. 4. Concentrations (mg/L) of anions in MW-10D. Nitrate concentrations were low (less than 0.1 mg/L) in the deep zone. Bioremediation pilot study was started on August 18, 2005, day 0.

Time (Days)	Chloride			Bromide			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot
0	80			0.45			209		
8	89	87	92	0.5	0.38	0.48	225	235	248
10	97	91	92	0.5	0.44	0.42	231	246	250
12	92	88	92	0.33	0.47	0.46	242	233	244
14	86	86	89	0.53	0.57	0.51	226	228	245
16	86	93	93	0.52	0.55	0.53	223	249	251
18	74	76	80	0.51	0.47	0.51	201	213	223
20	77	77	82	0.5	0.52	0.52	206	209	228
22	70	71	76	0.43	0.4	0.45	189	197	214
25	74	77	72	0.43	0.47	0.46	201	211	203
28	80	82	84	0.52	0.45	0.52	205	212	222
33	96	97	96	0.49	0.44	0.42	251	249	258
42	93	93	98	0.44	0.54	0.6	244	245	263
6	96	96	99	0.54	0.54	0.57	250	250	263
50	96	95	99	0.55	0.6	0.56	247	246	270
60	97	87	100	0.57	0.58	0.62	248	225	261
64	97	96	100	0.68	0.71	0.7	250	247	260
69	98	96	100	0.72	0.84	0.76	252	242	255
75	93	94	94	0.6	0.81	0.67	240	240	248
82	91	95	102	0.76	0.95	0.9	229	240	258
88	100	98	102	1.05	1.18	0.96	244	237	249
95	105	101	103	1.18	1.26	1.22			
102	96	100	104	1.06	1.2	1.18			

Time (Days)	Chloride			Bromide			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot
109	97	95	95	1.12	1.16	1.15	216	225	228
116	101	102	101	1	1.14	1.14	211	208	211
127	95	100	89	1	0.99	0.88	225	248	233
137	89	90	96	0.62	0.64	0.84	181	228	257
146	96	95	97	0.81	0.75	0.73	237	245	253
153	93	96	94	0.68	0.64	0.6	235	250	249
159	85	91	100	0.55	0.57	0.6	216	241	256
167	94	92	93	0.57	0.55	0.52	245	241	241
175	82	85	80	0.37	0.31	0.37	197	189	203
180	87	90	91	0.48	0.54	0.52	201	217	227
188	91	86	97	0.58	0.56	0.63	225	220	253
194	91	92	99	0.64	0.62	0.68	228	233	251
201	105	91	87	0.9	0.69	0.64	224	211	217
208	96	92	94	0.76	0.7	0.67	212	224	233
219	97	91	94	0.74	0.79	0.85	219	212	220
225	94	92	94	0.81	0.81	0.97	212	217	225
232	100	95	99	0.86	1.24	1.87	223	219	228
241	98	97	92	1.43	1.75	3.45	216	222	209
249	115	115	111	1.3	1.6	1.6	140	148	140
252	75	84	102	2.1	4.1	6.62	173	179	212
257	74	78	80	3.7	2.9	4.3	147	167	169
261	74	76	76	3.2	3.5	5	147	155	150
265	97	95	82	6.83	7.74	7.1	202	211	174
272	102	102	80	10.4	15.7	17.9	200	193	145
280	98	76	100	14.7	11	18.7	177	127	177
288	82	76	75	8.74	7.53	7.5	170	172	170
296	80	93	74	6.9	5.66	4.06	173	228	177

Time (Days)	Chloride			Bromide			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot
306	96	96	97	6.3	2.4	1.9	212	244	246
311	93	94	95	3.75	1.5	1.3	211	238	238
321	87	88	92	2.6	0.75	0.73	202	231	236
334	92	93	96	1.5	0.64	0.73	227	238	243
347	83	93	97	1.7	0.8	0.67	209	240	252
355	86	86	90	0.87	0.88	0.76	226	222	236
360	90	90	90	0.79	0.85	0.78	230	228	237
368	96	90	92	0.95	1	0.96	239	235	242
376	93	95	92	0.88	1.05	0.96	229	248	242
383	96	96	99	1.06	1.05	0.91	247	245	256
390	96	92	98	1	1.09	0.9	245	239	253
400	97	96	97	1.01	1.03	0.91	244	255	256
410	93	86	86	1.01	1.06	0.89	237	233	233
420	86	93	93	1.13	1.27	0.98	246	245	245
431	107	94	95	1.1	1.14	0.85	241	238	246
440	95	94	94	1.06	1.02	0.82	237	242	246
448	86	90	92	0.96	0.75	0.71	219	239	246
459	94	87	97	0.76	0.7	0.76	240	226	250
467	90	88	94	0.73	0.53	0.68	228	232	243
474	108	105	117	0.87	0.75	0.8	250	260	283
487	96	91	97	0.6	0.74	0.71	242	233	241
504	93	90	116	0.9	1.44	0.91	217	210	271
526	98	96	96	1	0.93	0.9	233	235	241
553				0.74	0.86	0.67			
573				0.7	0.82	0.65			
602				0.7	0.6	0.6			

Table S. 4. 5. Concentrations (mg/L) of anions in MW-12D. Nitrate concentrations were low (less than 0.1 mg/L) in the deep zone. Bioremediation pilot study was started on August 18, 2005, day 0.

Time (days)	Chloride			Bromide			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot
20	74	76	86	0.56	0.58	0.64	189	194	218
30	92	77	101	0.52	0.50	0.64	185	176	225
37	88	90	108	0.60	0.65	0.70	222	225	261
46	90	91	107	0.68	0.69	0.78	224	231	261
53	85	82	115	0.66	0.64	0.83	212	201	273
64	88	91	124	0.74	0.74	0.68	188	195	189
73	88	90	100	0.66	0.72	0.74	169	189	186
77	88	91	115	0.61	0.64	0.70	210	220	264
88	87	89	101	0.70	0.70	0.77	189	194	218
95	90	90	103	0.65	0.72	0.68	0.9	0.9	0.4
102	91	96	105	0.26	0.62	0.70	1.7	0.8	0.6
116	59	88	93	0.53	0.66	0.58	222	220	225
127	83	86	94	0.37	0.66	0.65	132	213	228
137	91	90	102	0.41	0.64	0.70	167	211	231
146	89	89	104	0.59	0.64	0.70	212	222	249
153	82	84	106	0.63	0.64	0.67	217	219	249
159	89	89	98	0.54	0.52	0.72	197	209	255
167	78	73	86	0.57	0.61	0.61	211	219	222
175	84	88	92	0.48	0.43	0.52	187	184	216
180	84	87	96	0.52	0.57	0.59	201	217	227
188	90	87	97	0.56	0.65	0.74	206	215	237
194	81	88	88	0.64	0.61	0.74	206	206	231
201	90	87	93	0.49	0.53	0.63	196	220	219

Time (days)	Chloride			Bromide			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot
208	87	87	97	0.57	0.60	0.64	219	218	226
219	90	87	93	0.59	0.68	2.04	207	209	213
225	82	86	95	0.80	1.39	1.97	209	197	200
236	85	85	108	1.28	1.78	2.30	123	128	142
241	97	87	98	1.17	1.60	2.18	127	127	161
245	86	69	70	1.25	0.95	1.82	145	130	147
249	95	71	71	1.02	0.80	1.21	187	157	157
252	64	71	67	1.10	0.82	1.10	197	161	156
257	83	86	64	0.71	0.79	0.92	121	162	145
261	71	66	99	1.10	1.30	0.96	142	147	149
265	88	90	96	0.84	1.10	1.44	157	150	225
280	69	87	72	1.43	1.36	1.45	177	180	203
288	87	85	90	1.10	1.26	1.10	160	212	168
296	88	88	102	1.05	1.25	1.18	204	204	215
306	88	89	95	1.33	1.22	1.34	203	205	235
311	89	91	99	1.23	1.21	1.29	198	205	217
321	88	91	103	1.15	1.06	1.03	203	205	225
334	86	90	97	1.13	1.08	1.06	197	204	229
347	90	84	98	0.97	0.91	1.04	193	199	215
362	91	88	96	0.96	0.90	0.83	198	189	220
368	86	88	103	1.03	0.91	0.95	203	194	215
376	89	96	111	0.84	0.78	0.84	188	196	216
383	93	95	108	0.80	0.92	0.98	192	214	240
390	94	97	107	0.90	0.87	0.94	203	209	238
400	93	97	108	0.88	1.00	1.20	206	217	235
410	90	104	101	0.92	1.23	1.62	211	216	233
420	95	96	108	0.92	0.76	1.71	198	202	224
431	94	95	106	0.98	1.16	2.00	207	214	240

Time (days)	Chloride			Bromide			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot
440	87	90	109	0.93	1.11	2.17	206	218	235
448	89	95	114	0.91	1.38	2.32	196	210	246
459	93	98	117	0.98	1.13	2.38	199	217	255
467	115	129	132	1.08	1.15	2.35	208	215	259
474	101	99	121	1.22	1.74	2.31	243	283	279
487	87	90	102	1.22	1.62	2.25	223	222	262
504	92	92	119	1.35	1.57	2.20	200	211	231
526				2.12	2.28	1.76			
553				1.64	1.62	1.13			
573				1.40	1.16	0.93			
602				0.99	0.77	0.68			

Table S. 4. 6. Concentrations (mg/L) of anions in MW-7D. Nitrate concentrations were low (less than 0.1 mg/L) in the deep zone. Bioremediation pilot study was started on August 18, 2005, day 0.

Time (days)	Chloride			Bromide			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot
18	199	76	89	0.39	0.49	0.59	160	191	222
22	249	119	115	0.28	0.38	0.48	109	151	201
28	197	107	94	0.35	0.50	0.53	159	187	211
33	203	105	115	0.38	0.49	0.53	179	223	252
42	168	97	106	0.52	0.56	0.62	204	222	248
50	113	89	111	0.52	0.57	0.62	205	208	265
57	105	98	106	0.57	0.56	0.63	225	238	257
73	94	83	114	0.52	0.50	0.63	224	203	269
77	98	91	108	0.50	0.51	0.60	234	224	257
93	91	91	107	0.50	0.57	0.63			
105	91	96	101	0.46	0.57	0.63	211	229	242
120	225	211	218	0.52	0.47	0.55	202	203	207
135	210	205	234	0.48	0.50	0.47	209	207	206
154	102	96	111	0.60	0.51	0.63	225	221	258
167	103	93	112	0.54	0.51	0.63	231	223	260
180	97	92	105	0.55	0.55	0.60	217	221	246
194	101	95	106	0.57	0.57	0.60	221	223	244
208	122	111	119	0.53	0.48	0.60	219	211	250
229	62	79	107	0.10	0.33	0.55	27	150	246
245	90	92	112	0.41	0.56	0.60	168	216	260
261	79	80	82	0.50	0.60	0.63	162	186	189
288	69	96	78	0.37	0.73	0.68	120	219	185
311	96	94	101	0.57	0.64	0.68	215	222	235
334	98	96	102	0.52	0.63	0.55	225	226	240
362	5	52	95	0.00	0.27	0.50	10	113	215
376	21	84	98	0.16	0.48	0.58	52	207	241
400	80	90	99	0.45	0.48	0.57	193	217	242
431	54	101	94	0.30	0.50	0.58	121	220	231
448	82	90	93	0.48	0.55	0.54	199	219	231
467	89	91	57	0.55	0.53	0.33	214	220	150
553				0.41	0.53	0.55			

Table S. 4. 7. Concentrations (mg/L) of anions in at MW-11D. Nitrate concentrations were low (less than 0.1 mg/L) in the deep zone. Bioremediation pilot study was started on August 18, 2005, day 0.

Time (days)	Chloride			Bromide			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot
18	86	91	94	0.42	0.40	0.42	233	261	271
25	85	88	88	0.34	0.35	0.38	230	257	253
42	103	106	105	0.40	0.39	0.38	267	299	295
50	110	109	118	0.37	0.42	0.50	285	304	309
57	105	106	107	0.40	0.40	0.38	275	301	303
73	107	93	106	0.34	0.31	0.37	279	271	285
77	107	108	111	0.37	0.39	0.43	234	224	257
93				0.37	0.43	0.41			
105	87	109	108	0.23	0.37	0.36	168	287	296
127	109	108	110	0.36	0.35	0.43	280	284	308
194	103	104	117	0.40	0.42	0.49	264	285	295
241	95	102	106	0.39	0.37	0.40	246	282	299
265	79	84	106	0.53	0.42	0.43	201	219	285
296	77	81	84	0.40	0.37	0.37	210	241	249
306	105	98	107	0.32	0.41	0.40	276	282	303
321	92	105	97	0.37	0.38	0.34	248	292	278
347	101	104	104	0.34	0.33	0.36	276	293	294
362	108	95	104	0.36	0.31	0.37	284	264	297
368	99	101	102	0.36	0.33	0.40	273	283	292
390	108	109	107	0.40	0.44	0.44	279	299	300
440	106	121	104	0.36	0.41	0.35	277	302	291
459	102	101	124	0.31	0.36	0.43	279	285	298
474	124	115	121	0.44	0.40	0.50	301	306	317
490	107	104	105	0.34	0.38	0.38	277	282	292
602				0.36	0.42	0.30			

Table S. 4. 8. Concentrations (mg/L) of anions in of chlorinated ethenes and methane at MW-5D. Bioremediation pilot study was started on August 18, 2005, day 0.

Time (days)	Chloride			Bromide			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot
18	61	65	63	0.30	0.54	0.55	83	168	161
25	60	64	67	0.30	0.42	0.51	84	122	162
33	80	76	83	0.37	0.50	0.55	153	189	207
46	86	83	84	0.33	0.56	0.58	117	188	201
53	84	83	83	0.40	0.47	0.52	122	155	199
73	84	81	79	0.33	0.50	0.60	116	184	200
77	76	80	82	0.34	0.44	0.58	110	166	193
93	82	81	80	0.21	0.33	0.56			
105	83	79	83	0.32	0.39	0.60	120	133	186
120	79	86	84	0.35	0.41	0.55	113	152	189
135	186	194	184	0.40	0.44	0.47	112	125	152
154	107	93	90	0.30	0.41	0.48	109	152	202
167	116	95	89	0.30	0.39	0.58	106	115	185
180	104	80	78	0.30	0.41	0.48	103	147	196
199	166	91	83	0.30	0.39	0.58	102	119	221
211	160	135	123	0.29	0.36	0.54	98	113	205
229	95	71	35	0.20	0.14	0.10	187	169	61
245	95	80	83	0.15	0.26	0.47	125	180	234
261	86	90	71	0.20	0.30	0.44	92	122	163
272	74	83	86	0.30	0.55	0.60	85	170	257
306	115	96	87	0.25	0.37	0.45	116	152	160
334	99	85	80	0.28	0.56	0.42	126	176	213
362	85	82	79	0.28	0.35	0.32	109	132	142
376	22	42	67	0.10	0.25	0.42	33	96	133
400	64	75	86	0.22	0.35	0.58	85	139	179
420	79	72	79	0.28	0.45	0.57	102	170	207
440	65	82	81	0.17	0.32	0.57	80	124	220
459	79	72	79	0.33	0.45	0.57	117	183	201
474	84	95	103	0.40	0.57	0.66	115	186	257
553				0.33	0.43	0.42			

Table S. 4. 9. Concentrations (mg/L) of anions in MW-8S. Bioremediation pilot study was started on August 18, 2005, day 0.

Time (days)	Chloride			Bromide			Nitrate			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
0	126			0.32			15.12	0.00	0.00	181		
2	139	132	134	0.62	2.60	7.80	13.30	0.00	0.00	197	198	205
4	141	138	138	0.52	1.07	1.94	14.39	0.56	0.03	203	206	205
5	142	138	139	0.60	0.81	1.13	10.46	1.49	1.21	205	205	206
6	135	134	133	0.54	0.72	0.83	8.80	0.00	0.00	194	197	195
7	133	134	137	0.40	0.37	0.59	11.19	2.79	2.51	194	199	201
8	119	136	139	0.27	0.42	0.50	10.00	2.89	2.33	169	197	206
10	146	133	132	0.38	0.38	0.37	13.21	5.76	2.79	197	197	198
12	135	136	137	0.40	0.41	0.44	13.66	6.59	4.74	194	202	205
14	132	132	129	0.34	0.39	0.36	14.03	7.42	1.40	192	198	194
16	139	139	140	0.39	0.35	0.32	6.78	7.51	16.58	209	208	200
18	117	104	117	0.32	0.31	0.34	12.20	7.24	6.22	170	155	175
22	103	108	104	0.25	0.30	0.28	11.10	7.79	5.57	150	159	156
30	82	124	121	0.18	0.30	0.40	6.31	8.25	5.30	137	176	172
42	126	137	130	0.34	0.30	0.30	13.66	8.90	8.62	183	206	193
50	145	141	142	0.38	0.31	0.34	15.94	9.63	8.62	212	208	210
57	124	140	140	0.33	0.45	0.57	6.04	0.00	0.00	179	205	202
60	150	133	132	0.40	0.30	0.38	8.23	4.91	0.00	215	195	195
64	131	137	138	0.30	0.32	0.34	8.40	8.43	4.75	192	202	201
69	147	147	142	0.35	0.34	0.32	9.36	8.36	4.33	221	216	209
75	139	137	130	0.33	0.29	0.32	9.81	8.25	5.57	204	204	194
82	137	134	137	0.30	0.26	0.38	9.54	7.79	5.39	197	196	200
88	135	143	143	0.32	0.33	0.41	10.55	9.17	6.04	196	208	207
95	138	140	142	0.40	0.33	0.27	0.00	2.98	3.35			
102	144	139	142	0.33	0.32	0.44	6.78	4.83	2.14			
109	143	143	143	0.33	0.35	0.34	4.18	6.22	4.18	211	213	211
116	106	134	142	0.21	0.32	0.38	5.94	5.57	4.65	156	197	209
127	160	175	224	0.31	0.34	0.39	7.51	7.42	7.79	178	201	204
137	138	136	141	0.34	0.32	0.38	7.24	7.88	5.67	203	202	202
146	139	137	138	0.33	0.29	0.37	11.10	9.72	7.24	209	204	204
153	122	131	137	0.28		0.28	9.72	9.81	9.91	182	205	204
159	111	138	129	0.27	0.30	0.28	7.61	10.00	6.96	169	206	191
167	137	137	139	0.32	0.32	0.36	10.73	10.46	8.99	204	205	205
175	133	133	128	0.24	0.29	0.30	11.28	10.18	9.26	195	198	192
180	132	129	125	0.37	0.33	0.31	10.73	10.18	9.36	198	192	188
188	128	132	136	0.30	0.30	0.42	11.19	11.37	7.61	190	199	201
194	131	136	135	0.32	0.34	0.38	11.92	12.02	8.99	190	203	195

Time (days)	Chloride			Bromide			Nitrate			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
199	121	133	132	9.40	11.50	29.20	0.00	0.00	0.00	179	197	194
201	123	125	127	4.30	5.50	8.80	3.72	2.79	0.03	182	186	187
203	136	130	134	2.70	3.03	6.90	6.78	5.30	0.65	203	192	196
205	136	130	130	1.85	2.02	4.11	8.53	7.33	2.98	201	193	190
208	132	135	137	1.13	1.31	2.88	8.53	8.62	4.46	194	200	200
211	133	126	118	0.72	0.76	1.96	9.54	9.08	5.20	198	189	173
219	129	128	124	0.47	0.46	1.62	10.46	11.10	6.04	190	190	183
225	134	133	133	0.42	0.38	0.85	11.65	11.37	10.18	200	197	194
232	135	134	138	0.35	0.30	1.09	12.93	12.75	9.81	201	198	203
241	124	127	127	0.33	0.35	0.51	11.19	11.83	10.09	182	189	189
249	126	104	108	0.38	0.26	0.33	10.82	8.90	8.90	183	145	150
257	102	109	132	0.03	0.30	0.30	9.54	10.18	11.92	146	146	184
265	103	134	130	0.35	0.50	0.47	8.99	11.83	11.28	139	194	188
272	105	109	105	0.32	0.31	0.35	9.81	10.18	10.18	134	138	135
280	111	128	116	0.40	0.36	0.40	9.26	10.82	9.26	155	186	163
288	107	115	126	0.30	0.30	0.43	10.18	10.92	11.83	147	160	182
296	140	142	138	0.37	0.35	0.37	14.30	14.21	13.48	201	203	197
306	136	98	108	0.37	0.34	0.42	12.66	12.38	12.20	192	205	231
321	129	126	127	0.28	0.28	0.28	9.54	8.34	10.18	178	173	174
334	137	141	141	0.31	0.27	0.38	8.90	11.37	9.72	189	194	193
347	138	131	144	0.36	0.31	0.31	7.05	6.96	7.14	193	177	198
348	121	131	131	1.35	1.90	4.60	0.00	0.00	0.00	166	174	172
355	135	138	121	0.64	0.51	0.63	0.05	2.24	0.00	182	188	162
360	135	141	141	0.39	0.35	0.45	7.42	7.05	2.61	180	189	190
368	138	141	141	0.29	0.32	0.33	6.87	7.70	4.93	183	191	191
376	140	140	141	0.35	0.36	0.36	8.62	8.16	7.14	186	185	189
383	135	144	148	0.31	0.29	0.41	6.68	6.78	6.78	181	191	198
390	143	157	150	0.30	0.34	0.36	7.42	7.70	6.96	190	201	199
400	150	151	144	0.31	0.32	0.40	8.34	8.34	6.78	199	199	190
410	147	148	147	0.33	0.31	0.39	7.51	6.04	6.04	193	193	193
420	128	144	147	0.34	0.32	0.45	6.59	7.42	6.31	175	189	193
431	134	148	149	0.33	0.32	0.35	6.96	7.61	6.59	175	195	196
440	147	150	149	0.23	0.03	0.03	7.70	7.33	5.57	190	193	191
448	144	150	150	0.31	0.27	0.40	7.61	6.96	6.50	187	193	193
459	150	151	139	0.38	0.28	0.34	7.51	7.70	6.04	195	195	180
467	140	147	147	0.30	0.32	0.40	8.07	8.16	6.31	182	192	190
474	170	187	159	0.49	0.45	0.42	10.92	2.79	1.58	223	221	201
490	152	148	158	0.34	0.34	0.35	8.99	9.26	8.16	195	194	206
504	118	133	149	0.24	0.27	0.34	6.04	7.51	7.33	154	174	195
526	175	153	142	0.37	0.35	0.40	0.00	7.24	5.85	176	194	183
553				0.28	0.28	0.36						
573				0.34	0.28	0.33						
602				0.23	0.39	0.30						

Table S. 4. 10. Concentrations (mg/L) of anions in MW-9S. Bioremediation pilot study was started on August 18, 2005, day 0.

Time (days)	Chloride			Bromide			Nitrate			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
0	125			0.30			16.21			179		
1	133	134	133	3.00	1.10	0.45	14.85	16.76	16.85	193	194	193
2	139	129	138	0.56	0.66	0.80	16.85	15.67	15.58	198	189	199
3	167	141	141	0.78	0.84	0.93	15.67	14.94	15.12	216	249	253
4	139	138	139	0.95	1.44	0.96	12.57	10.82	13.66	200	198	198
5	151	142	140	1.00	1.31	1.20	9.91	9.54	9.54	209	205	203
6	126	127	130	0.90	1.07	0.91	8.53	8.34	8.07	181	183	186
7	126	134	135	0.61	0.81	0.91	8.44	7.05	6.96	182	193	194
8	126	139	139	0.59	0.70	0.73	6.87	7.24	6.78	169	198	200
10	154	138	136	0.51	0.63	0.57	8.99	7.42	8.62	215	198	196
12	137	139	138	0.54	0.65	0.72	11.10	10.73	10.00	197	200	199
14	120	133	146	0.43	0.57	0.25	11.83	11.28	0.00	173	190	193
16	118	136	139	0.39	0.49	0.51	12.20	12.84	13.39	169	195	198
18	97	113	112	0.37	0.38	0.39	10.73	11.56	11.28	139	163	160
22	110	102	110	0.35	0.34	0.36	12.02	11.28	12.02	163	147	158
28	113	120	123	0.31	0.40	0.36	13.66	13.94	13.94	158	166	170
33	140	139	135	0.28	0.28	0.28	17.40	16.58	16.21	200	198	194
42	126	137	130	0.40	0.36	0.34	17.03	17.49	17.21	190	195	192
50	139	143	135	0.33	0.37	0.47	19.21	20.20	16.58	199	202	190
57	130	140	145	0.38	0.45	0.45	19.57	21.11	20.65	185	257	274
60	146	139	136	0.40	0.36	0.35	21.29	20.29	19.48	209	198	193
64	138	139	146	0.36	0.35	0.38	20.29	20.11	20.93	196	198	207
69	146	147	145	0.38	0.37	0.35	21.74	22.73	17.76	206	211	207
75	120	139	141	0.24	0.32	0.35	18.39	21.65	20.65	172	200	199
82	128	131	132	0.35	0.33	0.30	20.38	19.48	20.65	182	186	187
88	131	139	129	0.37	0.35	0.32	21.02	22.10	19.57	184	196	182
95	130	142	140	0.28	0.36	0.37	13.48	18.67	16.40			
102	113	140	142	0.27	0.36	0.38	15.03	17.76	14.57			
109	133	141	140	0.36	0.34	0.33	16.58	17.30	17.76	187	201	198
116	142	143	139	0.35	0.35	0.34	20.20	19.84	17.85	205	203	199
127	115	138	141	0.34	0.32	0.38	16.12	19.12	18.57	164	196	201
137	119	135	140	0.33	0.32	0.34	15.58	19.39	19.57	166	189	194
146	139	139	140	0.39	0.31	0.32	19.39	22.01	21.38	193	195	197
153	140	143	153	0.35	0.34	0.35	22.55	22.73	21.47	196	200	198
159	137	145	146	0.36	0.36	0.36	20.65	22.01	20.65	192	202	203
167	131	142	142	0.34	0.36	0.36	19.84	22.01	21.47	182	198	197
175	137	129	145	0.30	0.28	0.34	19.75	18.94	21.38	187	178	198

Time (days)	Chloride			Bromide			Nitrate			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
180	141	135	137	0.31	0.29	0.31	21.11	20.47	20.56	192	183	185
188	144	139	140	0.37	0.33	0.32	21.56	20.75	20.56	193	186	188
199	147	147	146	0.40	0.41	0.42	19.30	21.83	21.38	192	193	193
201	136	143	148	0.57	0.59	0.62	18.76	20.02	21.11	180	190	196
203	145	149	145	0.85	0.85	0.66	20.20	20.65	19.84	192	198	192
205	148	143	141	0.95	0.90	0.80	20.29	19.84	19.66	193	188	186
208	144	149	147	0.97	1.00	0.96	19.66	20.47	20.11	188	195	193
211	136	135	131	1.01	0.74	0.76	17.03	18.39	17.58	175	176	168
216	152	147	142	0.59	0.54	0.60	19.48	19.39	18.67	194	187	182
219	130	144	148	0.44	0.47	0.50	16.85	19.03	19.30	168	182	189
225	150	148	149	0.40	0.42	0.40	19.57	19.12	18.76	191	186	187
232	153	153	153	0.43	0.40	0.43	19.75	20.38	20.20	190	190	190
241	149	148	148	0.38	0.35	0.38	18.76	18.94	18.67	184	181	184
249	155	121	119	0.41	0.32	0.32	17.94	13.94	13.84	189	136	134
257	106	128	132	0.23	0.35	0.32	11.92	15.30	15.85	110	143	144
265	128	157	126	0.43	0.42	0.37	14.39	17.94	13.94	147	185	138
272	113	137	126	0.32	0.45	0.41	11.37	16.03	15.03	117	146	129
280	118	111	123	0.35	0.33	0.34	12.29	11.56	13.21	142	129	149
288	126	119	127	0.34	0.35	0.34	14.57	13.66	14.76	147	135	146
296	149	159	158	0.33	0.37	0.30	23.63	19.30	18.76	186	194	193
306	146	158	154	0.38	0.43	0.38	16.58	17.30	17.49	180	195	189
321	150	139	142	0.32	0.30	0.33	13.66	15.12	13.21	182	169	172
334	156	157	155	0.38	0.35	0.29	16.67	16.67	15.94	191	190	189
347	160	160	160	0.40	0.35	0.39	11.56	13.48	12.29	194	196	195
355	141	141	151	0.36	0.44	0.48	8.99	8.07	8.34	170	171	185
360	154	154	157	0.39	0.46	0.43	13.30	12.93	11.65	187	186	189
368	144	144	147	0.37	0.30	0.35	14.30	10.37	10.18	175	175	177
376	154	157	157	0.32	0.34	0.36	13.57	13.57	13.57	189	191	190
383	153	154	154	0.37	0.34	0.45	12.11	11.92	12.02	185	188	188
390	159	160	152	0.33	0.34	0.35	13.21	12.57	11.74	196	196	187
400	156	158	158	0.33	0.37	0.33	12.93	12.93	12.93	194	196	196
410	164	151	154	0.27	0.34	0.40	9.54	10.82	9.72	207	189	193
420	142	156	161	0.30	0.30	0.33	10.09	10.92	10.64	188	201	202
431	148	153	153	0.38	0.32	0.41	12.29	12.47	11.74	184	193	193
440	146	151	152	0.31	0.30	0.30	11.01	11.19	11.56	181	189	190
448	150	151	151	0.30	0.33	0.36	11.47	11.83	10.73	189	189	191
459	141	151	144	0.35	0.32	0.34	11.19	12.47	10.73	179	192	182
467	128	139	145	0.22	0.27	0.33	10.73	12.20	10.92	166	177	184
474	152	170	165	0.32	0.43	0.39	13.11	16.12	15.40	204	216	205
487	144	151	145	0.34	0.31	0.30	12.38	14.39	13.39	181	191	184
490	140	142	139	0.30	0.31	0.34	12.29	12.57	11.74	180	183	181
504	131	138	135	0.34	0.40	0.35	5.57	13.11	12.29	183	191	188
526	131	139	134	0.31	0.30	0.33	11.47	12.93	11.10	174	184	176

Time (days)	Chloride			Bromide			Nitrate			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
553				0.32	0.33	0.34						
573				0.32	0.36	0.31						
602				0.36	0.36	0.26						

Table S. 4. 11. Concentrations (mg/L) of anions in MW-10S. Bioremediation pilot study was started on August 18, 2005, day 0.

Time (days)	Chloride			Bromide			Nitrate			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
0	125			0.25			14.57			186		
8	136	136	136	0.40	0.85	0.95	15.40	12.75	11.19	200	204	205
10	149	135	134	0.94	1.98	1.74	14.39	10.46	10.46	207	203	202
12	124	130	134	1.65	2.48	3.03	11.92	10.09	9.36	184	194	201
14	129	128	128	1.54	3.98	8.30	13.21	8.34	2.14	191	191	191
16	133	136	133	2.16	5.20	8.40	11.28	8.07	4.56	179	200	197
18	116	100	112	1.96	6.94	12.80	11.65	5.57	2.98	170	150	167
20	116	118	116	3.00	5.94	12.00	11.01	8.53	3.72	170	172	171
22	105	101	104	3.04	5.55	10.33	9.72	6.68	2.89	155	150	154
25	98	95	109	0.95	4.11	10.10	10.46	6.50	1.86	144	141	161
28	108	119	121	1.57	4.66	6.81	10.92	7.70	4.46	153	170	171
30	110	124	124	0.84	3.73	7.20	11.92	8.80	2.05	152	170	170
33	133	139	139	0.83	3.90	5.60	13.94	7.42	2.79	194	204	205
37	137	140	140	0.62	3.00	3.90	15.40	8.53	5.02	198	206	207
42	130	136	136	0.76	1.20	2.89	14.76	13.57	5.11	189	199	198
46	142	145	145	0.89	1.61	3.05	15.85	12.84	1.86	205	213	210
53	118	139	136	0.42	1.10	2.04	14.12	14.03	1.03	173	202	190
60	132	146	144	0.56	1.23	1.70	14.67	6.13	4.09	195	208	205
64	117	140	142	0.63	1.09	1.45	10.00	6.31	6.04	169	203	204
69	137	144	143	0.73	1.20	1.19	13.48	8.80	7.51	199	208	206
75	122	139	138	0.40	1.12	1.18	15.94	8.90	5.30	179	202	198
82	127	141	140	0.38	1.01	1.20	19.30	12.93	4.18	186	203	198
88	127	140	141	0.39	0.77	1.03	19.57	11.65	3.72	182	201	198
95	31	138	143	0.11	0.61	0.87	1.86	10.00	1.49			
102	138	142	143	0.44	0.62	0.71	14.21	4.37	3.35			
116	143	142	140	0.51	0.53	0.66	10.09	12.02	9.26	213	212	208
127	104	123	132	0.34	0.47	0.49	6.78	6.78	7.88	157	186	200
137	122	132	131	0.35	0.46	0.43	8.80	10.18	11.47	182	199	196
146	143	137	139	0.43	0.42	0.41	13.11	13.11	14.03	211	201	200
153	130	141	142	0.33	0.41	0.40	13.30	14.12	14.57	191	205	203
159	140	145	143	0.37	0.42	0.40	13.11	14.30	14.57	207	210	206
167	139	138	139	0.38	0.38	0.45	15.67	14.48	13.39	205	204	205
175	134	127	137	0.47	0.47	0.46	15.67	12.93	13.57	205	220	211
180	136	138	130	0.36	0.38	0.31	16.21	14.76	13.57	201	204	192
188	134	131	137	0.36	0.39	0.37	16.85	15.40	14.94	197	192	205
194	141	138	135	6.57	3.60	0.81	0.00	0.12	6.87	194	196	195
201	140	130	127	1.02	1.04	0.96	0.00	0.00	0.17	202	188	184
205	139	139	140	0.75	0.71	0.81	1.12	1.40	0.84	201	203	204
208	143	142	141	0.80	0.75	0.64	0.37	2.14	2.24	204	205	205
211	125	138	139	0.56	0.62	0.64	4.46	9.26	5.20	180	201	203

Time (days)	Chloride			Bromide			Nitrate			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
216	135	119	133	1.33	1.08	1.06	1.12	5.76	5.30	195	174	193
219	135	137	139	1.58	1.71	1.67	0.00	0.00	0.00	196	195	201
225	143	142	142	1.90	2.37	2.20	0.00	0.00	0.01	177	186	190
229	143	141	141	2.03	2.52	2.50	0.00	0.01	0.01	175	183	184
232	145	143	142	1.93	2.27	2.35	0.00	0.00	0.00	180	180	184
236	146	141	135	2.15	2.16	2.16	0.00	0.00	0.00	182	180	173
241	142	145	138	1.94	2.15	2.15	0.00	0.21	0.01	181	192	181
245	139	141	139	1.91	2.07	2.06	0.08	0.87	0.00	182	187	184
249	75	70	95	1.96	1.96	4.80	0.00	0.01	0.00	159	157	215
252	107	108	111	1.40	1.30	1.50	0.00	0.30	0.00	129	130	136
257	109	142	114	1.50	2.10	1.70	0.17	0.01	0.20	135	183	140
265	105	145	140	1.94	2.85	2.70	0.00	0.00	0.00	129	185	186
272	111	134	125	1.94	2.52	2.40	0.02	0.00	0.17	121	157	145
280	119	147	118	1.70	2.50	2.10	0.00	0.00	0.00	126	165	128
288	133	148	148	1.55	2.33	2.30	0.10	0.78	0.10	179	204	208
296	140	113	115	2.13	1.77	1.75	0.48	1.01	1.28	188	145	146
306	149	150	147	1.83	1.90	2.05	3.16	2.89	4.18	199	195	199
311	146	147	146	1.90	1.90	1.90	4.09	5.20	4.83	191	195	195
321	124	145	130	1.41	1.68	1.46	2.70	5.02	4.74	155	192	176
334	150	146	141	1.65	1.50	1.63	0.00	0.74	6.04	173	185	190
347	138	135	147	1.18	1.18	1.34	0.00	2.24	6.13	159	177	200
355	141	138	138	0.98	1.03	1.09	0.00	0.00	1.68	167	182	185
360	151	144	144	1.00	0.97	1.04	0.19	0.01	4.37	182	181	191
368	138	144	144	1.13	1.40	1.40	0.00	2.42	1.96	168	191	195
376	144	144	148	1.37	1.31	1.72	2.51	3.81	3.91	187	191	197
383	151	151	147	1.20	1.20	1.26	0.02	3.44	2.89	186	199	193
390	159	152	152	1.12	1.27	1.20	2.79	4.18	3.26	198	201	198
400	148	149	151	0.93	1.07	1.15	1.68	4.09	3.72	192	196	201
410	151	151	147	0.83	0.92	0.99	2.79	3.44	2.70	189	198	202
420	142	144	144	0.63	0.80	0.80	1.12	5.02	4.65	194	193	193
431	150	153	150	0.66	0.63	0.66	0.30	3.35	3.91	187	196	202
440	149	148	150	0.56	0.60	0.63	1.49	5.20	4.74	193	197	201
448	147	144	153	0.50	0.51	0.62	1.68	5.20	4.18	188	193	206
459	153	150	144	0.50	0.47	0.50	2.98	6.96	6.22	190	202	192
467	144	140	149	0.43	0.41	0.54	4.74	6.04	7.42	185	183	196
474	158	155	170	0.50	0.43	0.58	6.04	8.25	9.81	194	205	229
487	180	154	153	0.50	0.40	0.44	0.44	8.34	8.90	198	205	202
504	143	135	137	0.08	0.30	0.28	6.04	12.29	12.29	198	174	176
526	146	143	145	0.46	0.40	0.40	3.81	5.85	6.22	197	191	195
553				0.40	0.41	0.37						
573				0.30	0.37	0.36						
602				0.30	0.30	0.31						

Table S. 4. 12. Concentrations (mg/L) of anions in MW-12S. Bioremediation pilot study was started on August 18, 2005, day 0.

Time (days)	Chloride			Bromide			Nitrate			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
18	109	107	106	0.35	0.26	0.30	13.66	13.02	12.57	145	147	146
22	100	106	108	0.27	0.30	0.29	14.12	14.03	12.66	137	145	145
28	88	93	113	0.24	0.26	0.32	13.30	12.38	13.84	121	126	151
33	133	132	116	0.30	0.26	0.23	19.12	19.30	17.49	187	187	165
42	127	128	129	0.27	0.36	0.36	20.84	19.75	19.03	182	184	186
50	108	132	129	0.23	0.33	0.34	19.30	23.18	21.11	155	195	189
57	132	132	130	0.33	0.33	0.37	24.97	24.17	23.18	191	193	191
73	114	124	130	0.29	0.30	0.34	26.76	27.48	25.60	174	187	197
77	125	126	130	0.30	0.29	0.34	29.62	27.75	26.67	191	189	196
93	129	128	127	0.32	0.29	0.35	26.67	25.15	22.46			
105	127	132	132	0.32	0.34	0.35	22.19	24.35	22.10	190	199	198
120	118	132	131	0.30	0.35	0.39	19.57	21.11	20.75	174	190	194
135	130	127	129	0.36	0.33	0.35	20.56	20.93	20.20	194	188	190
154	124	131	131	0.45	0.35	0.33	16.94	17.58	17.67	177	187	191
167	131	133	123	0.31	0.34	0.30	14.85	15.58	13.66	180	182	172
180	111	130	120	0.24	0.31	0.27	10.00	12.93	12.02	146	170	160
194	129	140	132	0.37	0.33	0.35	12.20	12.02	11.74	162	166	165
208	135	133	138	0.34	0.32	0.30	12.20	12.29	12.29	171	168	176
229	130	129	128	0.32	0.30	0.37	10.92	10.92	10.82	165	163	161
245	135	135	135	0.37	0.33	0.30	11.28	11.28	11.10	172	170	170
261	128	111	93	0.42	0.33	0.37	9.26	8.16	6.87	163	132	111
288	88	106	121	0.26	0.35	0.34	6.04	7.42	8.16	100	132	151
311	129	137	135	0.32	0.34	0.39	7.79	8.34	8.71	152	160	158
334	141	132	132	0.36	0.41	0.32	9.45	8.34	7.97	162	151	150
362	138	131	123	0.30	0.27	0.28	11.83	11.56	11.47	169	159	152
376	132	128	145	0.36	0.30	0.40	14.76	12.93	13.57	176	168	185
400	136	132	141	0.31	0.32	0.28	14.48	12.57	12.11	175	173	188
431	143	138	136	0.30	0.40	0.34	11.28	13.48	11.56	159	183	182
448	129	137	134	0.35	0.36	0.37	14.76	15.85	13.21	174	186	181
467	134	126	127	0.37	0.30	0.40	12.93	12.38	1.21	173	172	174
553				0.37	0.46	0.41						

Table S. 4. 13. Concentrations (mg/L) of anions in MW-7S. Bioremediation pilot study was started on August 18, 2005, day 0.

Time (days)	Chloride			Bromide			Nitrate			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
18	109	107	106	0.35	0.26	0.30	13.66	13.02	12.57	145	147	146
22	100	106	108	0.27	0.30	0.29	14.12	14.03	12.66	137	145	145
28	88	93	113	0.24	0.26	0.32	13.30	12.38	13.84	121	126	151
33	133	132	116	0.30	0.26	0.23	19.12	19.30	17.49	187	187	165
42	127	128	129	0.27	0.36	0.36	20.84	19.75	19.03	182	184	186
50	108	132	129	0.23	0.33	0.34	19.30	23.18	21.11	155	195	189
57	132	132	130	0.33	0.33	0.37	24.97	24.17	23.18	191	193	191
73	114	124	130	0.29	0.30	0.34	26.76	27.48	25.60	174	187	197
77	125	126	130	0.30	0.29	0.34	29.62	27.75	26.67	191	189	196
93	129	128	127	0.32	0.29	0.35	26.67	25.15	22.46			
105	127	132	132	0.32	0.34	0.35	22.19	24.35	22.10	190	199	198
120	118	132	131	0.30	0.35	0.39	19.57	21.11	20.75	174	190	194
135	130	127	129	0.36	0.33	0.35	20.56	20.93	20.20	194	188	190
154	124	131	131	0.45	0.35	0.33	16.94	17.58	17.67	177	187	191
167	131	133	123	0.31	0.34	0.30	14.85	15.58	13.66	180	182	172
180	111	130	120	0.24	0.31	0.27	10.00	12.93	12.02	146	170	160
194	129	140	132	0.37	0.33	0.35	12.20	12.02	11.74	162	166	165
208	135	133	138	0.34	0.32	0.30	12.20	12.29	12.29	171	168	176
229	130	129	128	0.32	0.30	0.37	10.92	10.92	10.82	165	163	161
245	135	135	135	0.37	0.33	0.30	11.28	11.28	11.10	172	170	170
261	128	111	93	0.42	0.33	0.37	9.26	8.16	6.87	163	132	111
288	88	106	121	0.26	0.35	0.34	6.04	7.42	8.16	100	132	151
311	129	137	135	0.32	0.34	0.39	7.79	8.34	8.71	152	160	158
334	141	132	132	0.36	0.41	0.32	9.45	8.34	7.97	162	151	150
362	138	131	123	0.30	0.27	0.28	11.83	11.56	11.47	169	159	152
376	132	128	145	0.36	0.30	0.40	14.76	12.93	13.57	176	168	185
400	136	132	141	0.31	0.32	0.28	14.48	12.57	12.11	175	173	188
431	143	138	136	0.30	0.40	0.34	11.28	13.48	11.56	159	183	182
448	129	137	134	0.35	0.36	0.37	14.76	15.85	13.21	174	186	181
467	134	126	127	0.37	0.30	0.40	12.93	12.38	1.21	173	172	174
553				0.37	0.46	0.41						

Table S. 4. 14. Concentrations (mg/L) of anions in MW-11S. Bioremediation pilot study was started on August 18, 2005, day 0.

Time (days)	Chloride			Bromide			Nitrate			Sulfate		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
18	124	122	122	0.37	0.33	0.30	12.02	10.82	10.37	183	185	185
25	120	128	113	0.28	0.33	0.33	10.73	11.10	9.08	178	190	170
42	138	142	150	0.36	0.30	0.33	12.57	12.47	12.57	205	210	225
50	133	147	141	0.28	0.32	0.34	11.10	13.02	11.83	192	219	211
57	142	144	144	0.45	0.34	0.33	11.65	12.66	12.29	209	212	214
73	112	137	146	0.24	0.31	0.32	10.27	12.02	12.20	164	180	216
77	139	145	147	0.31	0.31	0.33	12.66	13.11	12.38	191	189	196
93				0.31	0.26	0.36	10.46	9.63	8.53			
105	146	136	134	0.37	0.29	0.32	8.80	8.80	6.22	212	200	194
127	147	147	146	0.35	0.32	0.34	11.47	11.47	9.91	210	213	213
194	140	138	141	0.36	0.34	0.34	13.39	12.47	11.47	195	193	198
241	130	139	130	0.33	0.33	0.30	11.65	12.57	11.10	185	197	191
265	140	113	138	0.38	0.39	0.30	11.65	9.54	9.63	191	148	197
296	91	132	117	0.23	0.32	0.33	8.80	12.47	10.55	167	189	160
306	143	142	142	0.32	0.34	0.36	12.93	12.66	12.66	203	201	201
321	116	127	131	0.26	0.28	0.28	9.45	8.62	10.18	161	177	183
347	135	141	128	0.32	0.26	0.30	9.08	9.26	9.26	189	195	183
362	130	129	128	0.28	0.25	0.25	10.55	10.37	9.63	184	183	182
368	133	138	138	0.30	0.34	0.27	8.62	10.00	9.08	189	196	195
390	140	144	143	0.36	0.31	0.33	10.64	10.00	9.54	197	206	202
440	140	139	138	0.30	0.25	0.27	10.92	10.00	9.54	192	195	195
459	131	139	132	0.32	0.32	0.28	11.19	10.73	9.54	183	195	187
474	142	149	157	0.32	0.31	0.36	11.65	13.48	13.66	203	207	217
490	148	146	144	0.38	0.31	0.30	12.57	14.03	12.47	201	196	197
602				0.23	0.26	0.31						

Supplement to Chapter 5

Table S. 5. 1. Concentrations (μM) of chlorinated ethenes and methane at MW-8D.

Bioremediation pilot study was started on August 18, 2005, day 0.

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
2	28.9	54.3	52.1	12.8	2.5	2.4	17.9	2.6	14.8	1.2	1.2	1.0
4	31.4	54.7	56.2	7.1	2.5	3.1	19.0	3.3	2.2	1.3	1.3	1.0
5	19.0	47.1	50.0	5.2	2.9	3.7	20.9	4.5	3.1	0.8	0.8	0.6
6	34.9	55.2	48.7	6.9	3.7	4.4	12.6	4.3	4.5	1.1	1.3	0.9
7	33.3	59.2	57.4	7.2	3.6	4.2	10.4	3.3	2.8	1.2	1.4	1.2
8	36.2	60.5	57.4	7.7	3.3	4.1	12.6	3.0	2.8	1.1	1.3	1.0
10	33.7	68.9	60.9	11.2	3.4	6.3	18.5	2.9	4.4	1.1	1.1	1.0
12	8.9	60.2	51.4	4.2	5.3	5.9	46.1	7.2	10.0	1.1	1.0	0.9
14	16.1	60.4	53.1	7.9	5.4	5.6	39.5	9.3	18.5	1.2	1.2	1.0
16	16.8	58.2	45.6	10.4	4.1	5.2	31.1	5.6	23.3	0.8	1.2	0.7
18	7.8	70.6	53.2	5.1	5.5	0.6	48.2	7.6	25.3	0.6	1.2	0.9
22	10.3	52.6	48.4	7.4	6.6	6.4	45.9	14.1	19.3	1.4	1.4	0.8
28	2.3	44.0	30.4	1.9	8.4	6.5	64.4	20.0	31.4	1.0	1.1	0.8
33	7.3	42.4	7.4	9.1	11.1	5.6	41.3	11.4	12.7	0.2	1.3	0.1
42	17.2	49.2	16.4	15.9	6.2	3.2	36.7	5.0	2.4	1.6	0.7	0.0
50	31.0	54.2	45.6	16.6	7.9	9.3	18.2	3.6	3.6	1.9	1.5	1.4
57	29.0	45.0	32.7	8.8	4.6	5.6	13.3	4.3	4.1	0.9	1.4	0.5
60	26.5	29.3	17.7	16.1	10.5	5.8	13.1	11.6	23.9	1.0	1.1	0.6
64	3.1	11.5	11.3	3.5	4.9	5.5	55.4	46.9	39.1	1.1	1.2	1.1
69	2.0	22.7	11.3	1.4	7.3	6.4	49.4	28.6	30.0	1.6	2.3	1.9
75	0.7	24.0	13.5	0.6	7.1	4.2	50.7	15.6	23.0	1.2	1.4	1.1
82	1.0	15.6	10.7	0.1	5.0	3.9	50.0	27.3	25.8	2.9	3.9	4.6
88	5.5	22.9	8.8	2.9	5.9	3.4	34.2	18.5	24.3	3.9	3.9	3.9
95	4.0	19.3	14.8	7.8	7.0	7.0	39.5	20.5	15.9	5.9	7.2	7.0

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
102	5.3	17.2	9.5	7.3	4.4	3.1	22.5	11.6	10.4	6.0	9.1	6.0
109	2.9	3.8	13.0	3.3	3.0	4.4	27.1	32.0	18.2	4.5	4.6	5.2
116	2.8	13.8	16.5	4.0	5.2	4.5	27.9	20.8	10.7	5.0	6.8	8.1
127	3.7	15.0	14.1	3.7	4.9	4.2	45.3	24.1	14.3	10.5	12.9	12.1
137	3.1	1.2	7.0	1.0	1.3	2.6	1.7	20.9	10.8	1.3	3.7	0.7
146	2.9	15.6	5.8	4.7	3.7	2.5	23.4	11.9	14.2	6.7	4.7	1.9
153	4.6	15.5	5.2	6.5	4.1	2.2	22.5	15.2	15.5	10.4	14.5	11.7
159	9.3	14.6	5.7	3.8	3.4	2.4	20.6	15.5	0.6	11.0	9.1	9.6
167	7.8	15.9	8.6	7.7	5.4	4.2	17.3	10.4	9.6	11.5	12.5	9.5
175	2.5	18.8	9.9	2.2	4.0	3.2	16.7	13.2	11.4	9.8	16.5	11.4
180	1.8	19.5	9.3	1.0	10.3	3.8	5.1	10.1	6.5	0.2	12.1	9.3
188	5.9	19.0	10.1	4.3	4.8	10.5	10.1	8.1	12.7	15.4	20.3	17.0
194	6.8	14.7	15.1	5.3	6.5	5.1	15.0	12.5	9.4	6.6	20.1	21.3
199	2.9	1.5	0.2	5.2	1.6	0.0	19.1	32.0	22.8	12.4	17.4	12.5
201	0.2	3.6	2.4	0.0	0.9	0.8	33.2	2.6	23.1	12.6	13.2	12.4
203	0.1	2.7	1.0	0.2	0.5	0.5	25.7	18.4	12.5	10.0	10.5	7.5
205	5.3	4.7	2.2	0.2	1.5	0.9	27.9	26.2	20.4	18.8	20.8	13.8
208	1.2	8.6	3.6	0.6	2.0	1.2	32.5	23.9	18.8	7.3	15.2	10.3
211	1.6	12.8	8.2	0.2	3.8	2.9	27.1	20.4	16.4	17.0	23.6	16.2
219	0.5	17.5	14.5	0.2	4.1	5.4	31.1	16.3	9.0	12.4	20.9	13.6
225	0.0	1.6	12.3	0.0	1.4	2.9	0.0	13.6	5.2	0.0	13.3	19.2
232	0.0	1.7	21.4	0.0	1.2	3.8	0.0	0.6	4.4	0.0	12.9	11.5
241	0.0	2.5	17.9	0.0	2.8	3.4	0.0	12.5	2.8	0.0	8.8	8.9
249	6.5	19.9	18.5	3.1	3.5	4.4	8.9	2.5	1.6	13.5	13.7	10.5
257	2.4	19.2	16.2	1.8	3.8	4.2	12.7	2.7	1.6	14.2	13.8	3.4
265	3.3	15.8	15.8	1.5	3.7	4.0	12.4	3.4	1.7	8.7	10.6	5.7
272	7.1	14.4	21.6	3.5	4.6	4.1	7.4	3.1	1.2	8.9	8.8	7.3
280	4.1	15.7	13.7	3.6	3.8	4.5	8.2	2.0	1.3	7.8	10.0	5.9

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
288	12.1	23.3	16.4	4.5	3.7	4.3	2.9	0.9	0.9	5.6	3.8	7.1
296	8.2	15.1	15.4	3.4	3.0	3.5	4.2	1.6	1.0	2.5	9.1	7.1
306	16.1	18.4	13.1	2.6	2.5	3.1	1.8	1.4	1.3	14.8	11.6	9.8
321	10.0	15.8	16.3	1.7	1.7	2.5	6.5	1.4	0.9	6.2	14.1	8.0
334	9.1	19.1	12.0	2.4	1.8	2.3	4.9	1.3	0.9	3.8	10.9	6.3
347	8.1	18.4	11.2	1.0	2.3	1.8	1.4	2.1	1.1	0.5	1.5	0.2
348	2.2	4.5	4.8	0.5	1.1	1.3	0.6	1.3	1.8	0.5	6.9	25.2
355	8.6	6.2	3.2	3.4	1.8	1.1	10.3	8.3	10.1	12.8	7.4	7.9
360	2.7	3.8	3.1	0.7	1.0	1.0	0.8	1.3	2.1	0.3	0.8	1.2
368	7.3	6.4	6.4	1.3	1.9	1.9	1.3	2.4	2.2	0.3	0.4	1.0
376	2.0	2.2	1.7	1.4	0.6	0.5	9.5	3.1	2.3	13.7	14.9	10.8
383	3.2	9.0	4.5	1.5	1.1	1.3	3.7	1.4	1.4	7.2	6.8	5.8
390	3.9	10.2	6.2	1.7	1.1	1.2	3.7	1.4	1.2	11.9	9.7	8.4
400	5.4	8.4	8.5	1.6	1.1	1.3	4.0	2.6	1.1	0.9	1.2	0.1
410	3.0	8.9	5.3	1.4	1.1	1.2	3.1	1.8	1.3	7.6	7.9	4.1
420	7.1	7.6	6.1	1.5	1.1	1.0	3.5	1.9	1.4	10.8	10.2	10.9
431	4.0	11.6	5.7	1.7	1.2	0.9	3.2	1.3	0.8	14.6	19.1	7.4
440	3.9	12.9	6.1	2.3	2.2	1.3	4.3	1.9	0.6	11.7	13.4	4.8
448	2.2	15.5	5.9	0.8	2.2	1.4	1.3	2.6	1.5	2.6	14.6	10.3
459	3.7	10.4	2.8	2.1	1.9	0.8	4.0	1.9	0.9	10.2	7.7	0.1
467	4.8	10.7	3.3	1.8	1.4	0.7	2.8	1.2	0.8	10.1	0.5	0.0
474	1.6	8.2	6.3	1.0	1.3	1.5	4.0	2.0	1.9	1.0	18.9	17.1
490	8.3	7.2	4.4	1.1	0.9	1.2	1.3	0.6	0.7	7.3	9.2	7.1
504	4.3	11.3	4.6	0.9	1.2	0.7	1.2	1.2	0.9	0.0	0.0	0.0
526	3.8	10.0	4.1	0.8	1.1	0.6	0.9	1.0	0.7	0.0	0.0	0.0
553	7.3	5.0	4.1	1.7	1.2	0.6	0.8	1.0	0.7	0.1	0.0	0.0
573	6.8	15.6	16.6	2.4	3.8	4.9	2.3	1.9	1.9	3.0	5.1	6.5
602	13.8	26.5	31.5	2.5	3.0	4.9	0.8	0.6	0.9	0.0	0.0	0.0

Table S. 5. 2. Concentrations (μM) of chlorinated ethenes and methane at MW-9D.

Bioremediation pilot study was started on August 18, 2005, day 0.

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
1	28.9	54.3	52.1	2.5	2.9	3.1	0.1	0.2	0.1	0.7	0.7	0.5
2	31.4	54.7	56.2	2.5	2.6	3.2	0.2	0.2	0.1	0.8	0.7	0.6
3	19.0	47.1	50.0	2.3	2.5	3.2	0.1	0.1	0.1	0.8	0.8	0.5
4	34.9	55.2	48.7	2.5	2.7	3.0	0.1	0.1	0.2	0.9	0.8	0.4
5	33.3	59.2	57.4	2.3	2.5	2.5	0.2	0.1	0.1	0.6	0.4	0.2
6	36.2	60.5	57.4	2.4	2.2	2.5	0.6	0.5	0.4	0.8	0.7	0.6
7	33.7	68.9	60.9	2.4	2.6	2.8	0.5	0.4	0.4	0.8	0.8	0.3
8	8.9	60.2	51.4	2.6	3.2	2.9	0.5	0.5	0.4	0.7	0.7	0.3
10	16.1	60.4	53.1	2.6	3.1	3.7	0.1	0.1	0.1	0.6	0.7	0.3
12	16.8	58.2	45.6	2.6	3.0	3.6	0.2	0.2	0.2	0.6	0.7	0.5
14	7.8	70.6	53.2	2.8	3.3	3.3	0.7	0.8	0.7	0.7	0.7	0.7
16	10.3	52.6	48.4	2.6	3.0	3.4	0.0	0.6	1.2	0.5	0.7	0.3
18	2.3	44.0	30.4	3.0	3.8	3.8	0.3	0.0	0.0	0.7	0.8	0.4
20	7.3	42.4	7.4	2.8	3.3	3.5	0.7	0.8	0.7	0.7	0.7	0.4
22	17.2	49.2	16.4	3.1	4.1	3.3	0.5	1.6	0.5	0.7	0.9	0.1
25	31.0	54.2	45.6	4.2	5.9	4.8	1.4	3.7	1.6	0.7	0.9	0.3
28	29.0	45.0	32.7	2.8	4.2	4.8	1.6	3.7	2.5	0.4	0.5	0.5
30	26.5	29.3	17.7	6.3	8.7	7.8	3.0	6.7	5.0	0.6	1.0	0.3
33	3.1	11.5	11.3	10.6	9.3	5.8	4.7	9.1	2.5	0.8	0.7	0.3
37	2.0	22.7	11.3	8.1	7.2	7.0	5.5	9.7	7.2	0.3	0.4	0.4
42	0.7	24.0	13.5	10.8	8.8	5.1	11.4	19.3	5.2	0.8	0.9	0.3
46	1.0	15.6	10.7	12.4	8.6	4.3	17.6	29.8	7.4	0.5	0.5	0.3
50	5.5	22.9	8.8	10.8	8.8	5.1	11.4	19.3	5.2	0.8	0.9	0.3

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
53	4.0	19.3	14.8	6.9	3.2	4.7	54.4	20.8	7.5	0.9	0.2	0.2
57	5.3	17.2	9.5	0.8	4.6	4.5	61.3	49.4	35.9	1.7	1.2	0.9
60	2.9	3.8	13.0	3.2	4.5	5.7	58.9	50.3	24.3	1.1	1.1	0.5
64	2.8	13.8	16.5	1.4	6.1	4.1	59.0	47.3	27.7	1.9	0.8	0.4
69	3.7	15.0	14.1	3.0	4.9	4.0	48.5	34.8	20.7	1.7	0.7	0.5
75	3.1	1.2	7.0	0.1	2.9	2.1	57.6	26.7	5.8	0.8	0.4	0.4
82	2.9	15.6	5.8	0.1	2.3	3.0	58.4	36.1	10.2	1.1	0.4	0.4
88	4.6	15.5	5.2	3.0	4.9	3.1	43.0	22.5	9.4	0.8	0.7	0.3
95	9.3	14.6	5.7	7.3	7.1	5.2	32.3	25.9	12.9	1.1	1.1	0.6
102	7.8	15.9	8.6	4.1	4.7	4.4	23.8	17.0	10.0	1.2	0.9	0.7
116	2.5	18.8	9.9	0.8	4.4	4.6	18.4	22.3	12.4	0.2	1.5	0.9
127	1.8	19.5	9.3	2.4	2.4	4.7	36.0	30.5	15.2	2.6	0.8	1.5
137	5.9	19.0	10.1	0.4	3.3	3.1	12.5	12.9	5.7	1.2	1.1	0.7
146	6.8	14.7	15.1	3.3	5.7	2.2	19.4	7.5	2.5	1.1	1.2	0.5
153	2.9	1.5	0.2	1.7	6.2	2.6	5.9	6.4	2.4	0.0	1.2	0.6
159	0.2	3.6	2.4	1.5	5.3	3.5	4.9	6.2	3.6	0.1	0.7	0.7
167	0.1	2.7	1.0	5.1	6.8	4.8	7.5	4.7	3.1	1.1	1.1	0.8
175	5.3	4.7	2.2	5.2	6.2	4.6	6.4	4.7	2.7	1.4	0.7	0.5
180	1.2	8.6	3.6	5.9	6.8	3.9	5.3	4.0	2.4	1.4	1.4	0.4
188	1.6	12.8	8.2	5.2	6.6	1.9	4.1	3.0	0.8	0.5	1.5	0.5
199	0.5	17.5	14.5	5.4	8.0	4.0	5.5	3.3	1.5	1.4	1.7	0.9
201	0.0	1.6	12.3	6.4	5.6	3.3	3.8	3.4	2.0	1.1	0.5	0.7
203	0.0	1.7	21.4	3.0	3.8	1.6	3.2	2.4	1.2	0.8	0.9	0.4
208	0.0	2.5	17.9	4.6	4.4	2.4	5.3	4.3	1.8	1.2	1.1	0.5
219	6.5	19.9	18.5	8.5	6.0	2.4	5.9	4.8	1.9	2.6	1.5	0.8
225	2.4	19.2	16.2	0.0	4.6	5.8	0.0	7.2	4.8	0.0	2.2	2.5
232	3.3	15.8	15.8	0.0	5.6	6.1	0.0	6.6	4.5	0.0	2.0	2.2

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
241	7.1	14.4	21.6	0.0	4.5	5.4	0.0	8.1	6.3	0.0	1.2	1.5
245	4.1	15.7	13.7	6.5	6.5	2.4	6.8	6.8	5.2	2.4	2.4	1.1
249	12.1	23.3	16.4	0.0	4.4	4.6	0.0	5.9	4.1	0.0	2.4	1.9
257	8.2	15.1	15.4	0.0	3.2	4.1	0.0	8.9	5.9	0.0	2.3	0.9
261	16.1	18.4	13.1	5.4	4.7	3.3	6.3	3.9	2.2	1.3	0.9	0.8
265	10.0	15.8	16.3	0.0	2.4	4.9	0.0	8.1	5.0	0.0	1.5	1.9
272	9.1	19.1	12.0	2.4	5.4	3.2	10.1	4.9	1.5	1.5	2.2	0.7
280	8.1	18.4	11.2	5.6	5.3	3.2	4.8	4.7	2.1	2.2	2.3	1.0
288	2.2	4.5	4.8	3.7	6.0	2.8	6.7	4.0	1.5	2.0	2.3	0.4
296	8.6	6.2	3.2	4.0	5.2	3.9	4.8	4.1	2.3	1.3	1.1	1.1
306	2.7	3.8	3.1	1.9	5.0	3.3	5.9	4.8	1.9	1.1	2.8	1.4
321	7.3	6.4	6.4	5.5	4.3	2.4	4.2	3.4	1.1	3.4	2.4	0.5
334	2.0	2.2	1.7	4.7	5.0	2.4	3.7	4.2	1.2	0.8	3.0	0.8
347	3.2	9.0	4.5	4.3	4.6	2.2	5.3	4.7	1.6	1.8	2.3	0.6
355	3.9	10.2	6.2	4.6	3.2	1.8	5.7	4.3	1.7	3.9	2.3	0.9
360	5.4	8.4	8.5	2.0	2.1	1.0	2.1	2.4	0.8	2.4	2.7	0.9
368	3.0	8.9	5.3	2.9	1.5	4.4	4.0	1.2	5.6	3.5	1.5	6.5
376	7.1	7.6	6.1	2.1	3.4	1.7	3.4	4.8	2.6	2.0	6.7	0.0
383	4.0	11.6	5.7	6.5	3.0	1.3	3.6	4.3	1.0	3.4	3.8	1.0
390	3.9	12.9	6.1	2.7	3.2	1.4	3.9	4.4	1.4	5.4	5.9	1.8
400	2.2	15.5	5.9	1.9	3.5	1.4	2.9	4.5	1.3	0.1	3.2	3.6
410	3.7	10.4	2.8	3.2	2.2	1.2	4.4	2.9	1.4	4.4	2.1	0.7
420	4.8	10.7	3.3	2.1	3.6	2.0	3.0	4.2	2.0	3.9	7.2	2.6
431	1.6	8.2	6.3	2.8	4.3	1.8	3.3	4.4	1.3	6.8	11.3	3.2
440	8.3	7.2	4.4	3.3	4.0	1.9	3.4	3.7	1.9	4.1	6.8	2.5
448	4.3	11.3	4.6	4.3	3.6	2.0	4.2	2.8	1.5	4.0	1.8	0.5
459	3.8	10.0	4.1	1.9	2.9	1.5	3.1	2.7	0.9	3.3	0.3	1.2

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
467	7.3	5.0	4.1	1.5	2.2	1.2	1.4	1.8	0.9	0.0	0.1	0.5
474	6.8	15.6	16.6	0.8	0.9	0.7	1.2	1.3	0.6	24.4	27.0	7.0
487	13.8	26.5	31.5	1.2	2.6	1.0	0.6	1.4	0.7	1.5	0.1	2.0
490	8.3	7.2	4.4	2.4	2.6	1.1	1.5	1.1	0.7	1.8	2.6	0.5
504	4.3	11.3	4.6	0.1	1.0	6.1	0.3	1.5	3.5	0.0	0.1	0.1
526	3.8	10.0	4.1	0.1	0.9	5.5	0.2	1.2	2.9	0.0	0.1	0.1
553	7.3	5.0	4.1	2.2	1.9	1.4	1.6	1.8	0.7	0.5	0.4	0.2
573	6.8	15.6	16.6	2.7	4.1	4.3	4.7	3.1	2.4	0.1	2.3	0.6
602	13.8	26.5	31.5	1.8	5.1	5.9	2.0	1.3	1.1	0.1	0.1	0.0

Table S. 5. 3. Concentrations (μM) of chlorinated ethenes and methane at MW-10D.

Bioremediation pilot study was started on August 18, 2005, day 0.

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
8	50.6	62.7	57.4	4.2	2.8	4.1	0.5	0.2	2.8	0.4	1.5	1.0
10	43.2	60.1	53.0	2.9	2.9	3.6	0.1	0.3	0.2	0.1	1.7	0.9
12	56.0	41.2	58.2	2.8	2.1	3.0	0.2	0.2	0.2	1.6	0.3	1.5
14	50.7	71.6	54.0	3.0	3.0	3.4	0.6	0.2	0.8	1.4	1.5	1.4
16	38.8	51.7	52.3	2.3	2.5	3.7	0.6	0.3	0.6	0.5	1.2	0.9
18	60.8	63.0	43.4	3.0	2.9	3.0	0.0	0.0	0.0	1.4	1.9	0.3
20	50.7	71.6	54.0	3.0	3.0	3.4	0.6	0.2	0.8	1.4	1.5	1.4
22	57.9	38.4	55.7	3.3	2.2	3.2	0.9	0.4	0.3	1.6	0.2	1.6
25	63.8	70.0	71.9	3.5	3.4	4.0	0.2	0.3	0.3	1.4	1.6	1.5
28	45.0	47.8	52.2	2.4	2.6	3.4	0.3	0.3	0.3	1.0	1.3	0.9
33	56.7	64.3	59.8	0.3	6.2	8.6	2.7	1.4	1.5	1.6	2.0	1.3
42	47.0	68.5	52.6	2.6	3.7	3.3	0.3	0.3	0.3	1.5	1.8	0.6
46	56.4	55.4	55.4	3.3	3.5	3.5	0.7	0.6	1.8	1.2	1.4	1.4
60	56.0	57.3	57.3	6.4	6.0	6.0	5.0	2.7	16.0	1.1	1.5	1.5
64	56.0	5.6	56.0	4.3	5.8	5.7	1.7	2.4	2.4	0.9	1.4	.3
69	46.7	49.5	42.4	6.5	6.6	6.9	4.8	4.7	5.3	1.6	1.4	1.4
75	41.3	37.9	34.4	6.7	7.0	8.2	4.0	9.4	9.1	0.9	1.0	0.7
82	30.9	24.8	21.7	11.6	8.5	9.7	10.4	17.1	17.5	1.5	1.9	1.5
88	6.8	10.1	17.5	10.0	4.3	4.2	38.2	25.4	31.4	1.5	0.4	0.9
95	1.0	2.7	3.3	0.3	1.8	1.8	57.4	50.5	46.8	1.6	1.7	1.7
102	1.4	5.1	5.7	0.5	2.3	1.7	44.7	42.1	37.8	0.9	1.9	1.7
109	3.2	4.5	4.5	0.7	2.2	2.2	37.0	41.8	41.8	0.9	1.8	1.8
116	1.1	2.0	10.4	0.4	1.1	5.0	37.2	25.1	28.6	1.3	0.1	1.2
127	17.2	14.8	14.8	6.2	5.1	5.1	37.6	24.6	26.6	2.1	1.8	1.8

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
137	8.0	10.7	16.4	2.4	3.3	4.7	10.7	13.0	13.2	0.7	0.7	1.5
146	24.0	28.5	24.9	6.0	6.5	6.5	17.5	14.3	11.2	1.8	1.4	0.9
153	25.3	31.2	25.8	5.8	6.7	6.2	13.4	10.4	8.6	1.7	1.9	1.6
159	26.0	30.8	29.3	5.4	6.2	5.9	9.8	7.8	6.5	1.3	1.4	1.5
167	31.6	33.1	26.2	6.5	6.7	5.8	6.6	6.0	5.0	1.4	1.4	1.4
175	27.4	27.4	7.3	5.0	5.0	2.0	6.1	4.6	2.4	1.4	1.4	0.0
180	38.1	39.9	33.8	5.9	6.4	5.7	5.1	5.4	4.4	1.7	1.8	1.5
188	32.8	32.7	33.0	5.5	5.1	5.5	5.1	3.8	3.9	1.7	1.6	1.6
194	41.2	42.9	33.8	6.1	6.3	5.5	5.3	5.3	5.2	2.1	2.5	3.1
201	2.3	13.7	23.3	0.5	2.8	5.4	39.6	25.9	14.2	6.5	4.8	3.0
208	0.9	24.2	23.7	0.2	5.0	5.8	38.0	18.2	10.9	4.7	2.0	3.5
219	0.5	20.5	18.2	0.4	5.9	5.7	47.1	19.3	15.8	5.2	4.6	6.2
225	5.7	18.8	16.6	4.7	6.1	5.5	22.4	11.4	13.1	1.2	8.5	12.3
232	2.8	18.5	14.8	1.9	6.8	6.5	6.8	15.2	12.9	0.1	2.8	20.6
241	8.5	13.6	11.5	8.1	7.5	6.3	21.1	18.7	14.7	9.7	10.2	20.2
249	0.6	12.2	11.7	0.3	6.4	6.6	35.7	23.0	18.3	16.9	16.0	23.4
252	11.8	12.6	6.9	7.2	7.3	5.3	21.5	20.4	18.1	14.6	20.4	24.8
257	4.8	9.8	8.1	5.3	6.2	5.5	22.0	20.9	20.5	18.2	20.1	24.1
261	3.4	7.1	7.3	4.7	5.8	6.1	27.4	23.9	24.7	12.2	5.8	15.6
265	1.5	5.1	8.0	1.9	4.2	5.4	28.1	27.7	24.0	17.4	19.8	20.2
272	0.5	6.6	1.2	0.2	4.2	0.8	37.5	29.6	23.8	19.4	10.9	35.1
280	0.4	7.1	5.5	0.2	5.8	4.1	35.7	21.9	23.1	22.9	15.3	21.8
288	1.8	9.0	11.1	1.5	5.0	6.8	30.6	23.6	16.4	29.0	25.7	27.0
296	1.5	5.1	8.0	1.9	4.2	5.4	28.1	27.7	24.0	7.4	19.8	20.2
306	5.1	19.0	13.3	3.9	7.6	6.9	22.7	11.1	9.7	23.1	21.2	23.4
311	8.2	15.7	12.8	4.6	6.9	6.6	17.4	7.7	6.8	12.9	11.1	11.1
321	11.1	16.9	13.2	3.9	6.9	6.7	11.7	4.3	3.6	2.1	18.0	14.5
334	17.7	20.2	13.0	7.8	9.8	7.8	7.6	3.7	2.7	1.6	16.0	3.9
347	16.4	12.0	0.0	10.5	8.2	0.0	4.8	3.3	0.0	0.1	0.1	0.0

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
355	13.1	12.2	9.9	9.2	9.8	8.0	5.7	5.6	4.1	12.3	11.9	9.2
360	6.9	6.3	2.3	5.1	4.6	1.7	2.7	2.3	0.8	6.8	5.6	1.5
368	7.4	14.8	12.4	6.6	10.1	9.0	13.0	6.1	5.0	11.3	11.4	9.9
376	3.1	9.4	8.4	2.3	9.2	8.3	19.2	6.8	4.4	13.8	14.8	12.4
383	8.4	5.5	7.8	9.0	6.5	8.3	6.4	3.6	4.7	8.8	3.4	6.1
390	8.6	9.3	7.3	8.8	8.9	7.0	6.5	4.8	3.7	11.3	12.4	9.5
400	4.7	8.2	5.5	5.4	8.0	5.8	8.9	5.0	3.3	0.2	0.5	2.3
410	3.8	6.8	5.9	4.5	7.3	6.4	11.1	5.3	4.1	8.3	6.9	2.7
420	4.4	7.6	5.9	5.6	7.4	6.1	8.5	6.2	4.1	8.4	7.8	6.8
431	5.6	8.4	6.3	6.9	7.7	6.3	6.1	4.3	3.5	3.8	8.7	8.9
440	6.3	12.3	8.3	7.0	8.4	7.0	7.1	4.6	3.3	6.6	6.4	4.5
448	7.0	9.8	8.5	8.2	9.0	6.7	7.8	5.6	3.2	12.3	2.7	9.2
459	5.5	2.0	7.8	6.1	7.6	6.0	7.9	3.1	3.2	11.6	8.5	9.2
467	0.5	10.8	7.3	0.8	6.0	4.5	2.8	2.0	2.1	0.0	6.3	7.3
474	3.3	10.4	7.0	3.7	6.1	5.5	8.5	3.0	4.0	9.3	13.8	12.1
487	6.1	5.3	8.4	4.1	3.6	5.5	2.1	2.1	3.7	9.4	10.3	11.3
504	4.0	5.5	3.5	2.2	3.6	1.2	1.5	2.3	0.6	0.3	0.1	0.1
526	3.5	4.9	3.1	2.0	3.2	1.1	1.2	1.8	0.5	0.3	0.1	0.1
553	3.9	6.2	4.2	2.9	5.9	4.6	2.5	3.6	3.1	0.1	0.3	0.0
573	6.6	7.4	6.4	5.5	7.4	6.6	4.6	6.4	5.2	4.6	7.1	3.3
602	5.6	11.7	9.7	4.6	7.8	7.4	3.0	2.7	2.5	0.0	0.1	0.0

Table S. 5. 4. Concentrations (μM) of chlorinated ethenes and methane at MW-12D.

Bioremediation pilot study was started on August 18, 2005, day 0.

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
20	16.1	60.4	53.1	7.9	5.4	5.6	1.0	0.9	1.7	1.2	1.2	1.0
30	43.8	43.0	42.5	1.3	14.5	15.2	1.0	0.9	1.7	1.3	1.3	0.3
37	26.4	40.6	36.6	7.1	8.8	11.9	0.2	0.1	0.1	0.7	0.9	0.4
46	36.0	29.9	11.5	8.4	9.4	4.9	0.5	0.5	0.7	1.1	1.3	0.1
53	43.8	16.9	46.0	9.7	5.8	10.5	0.2	0.2	0.2	1.1	0.4	0.3
64	42.5	46.7	52.0	9.1	10.8	9.3	0.9	0.3	0.3	1.0	1.0	0.4
73	24.6	25.2	20.6	5.2	6.6	4.3	0.0	0.6	0.7	0.6	1.1	0.1
77	48.9	52.1	49.4	8.6	8.6	10.7	0.3	1.0	0.9	1.3	1.4	0.7
88	49.3	50.0	52.4	8.7	11.3	8.8	0.1	0.2	0.2	1.0	0.8	0.3
95	40.9	48.9	54.3	7.0	7.2	12.1	0.9	0.9	0.4	1.0	1.2	0.7
102	13.7	35.8	42.7	2.9	6.0	11.6	1.7	0.8	0.6	0.4	1.1	0.6
116	26.2	32.8	46.1	5.0	5.3	7.2	1.2	0.9	1.0	0.8	0.9	1.1
127	14.8	50.6	39.2	3.3	6.9	6.9	2.4	1.1	0.8	0.6	1.4	0.7
137	9.5	33.7	37.1	3.7	4.0	7.1	1.5	1.0	0.4	0.3	0.8	0.2
146	42.4	57.4	56.6	5.6	10.3	10.7	0.6	0.3	0.3	1.0	0.5	0.6
153	18.6	57.6	58.4	2.8	9.0	11.4	0.2	0.2	0.3	0.0	0.7	0.6
159	46.1	39.7	58.6	5.7	6.3	12.8	0.4	1.5	0.3	0.9	0.5	0.4
167	32.6	59.7	55.8	5.3	6.6	9.1	0.5	0.6	1.1	0.8	1.0	0.8
175	16.7	53.0	58.0	3.6	6.2	9.7	0.4	0.2	0.2	0.3	0.6	1.3
180	41.3	59.9	59.3	5.8	6.7	9.1	2.4	2.5	1.5	0.6	1.4	0.3
188	53.8	60.8	54.4	7.3	7.0	12.3	0.3	0.2	0.0	1.2	1.4	1.0
201	51.6	54.3	42.2	6.7	6.4	11.4	0.8	0.7	2.3	0.8	0.8	0.8
208	55.1	60.9	43.6	6.7	10.1	17.1	1.4	2.9	9.0	1.1	1.2	0.7

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
219	43.3	47.4	25.2	6.3	5.2	12.5	2.0	3.3	21.5	0.9	0.7	0.4
225	21.7	35.9	27.2	4.3	5.8	7.8	5.5	11.1	21.5	0.9	1.4	1.0
236	15.8	19.1	28.2	4.0	3.4	8.0	8.5	9.5	20.0	0.9	0.0	0.9
241	30.3	40.1	24.4	4.9	6.3	9.4	9.2	11.7	21.1	1.0	1.0	0.4
245	12.8	48.9	27.1	3.7	5.0	9.6	9	5.5	19.9	0.6	1.1	0.7
249	13.4	34.9	31.9	3.6	5.8	8.3	6.0	6.8	13.9	0.9	1.3	1.0
252	6.8	36.0	27.6	2.9	6.0	9.0	5.5	6.7	13.8	0.5	1.0	0.9
257	10.7	42.4	30.4	3.7	6.4	9.7	6.2	6.3	12.3	0.8	1.4	1.0
261	28.8	30.6	27.2	6.0	7.7	9.4	6.3	9.7	11.2	0.9	0.7	0.7
265	30.9	35.8	26.4	6.5	9.6	14.2	7.4	11.2	12.7	1.1	1.0	0.4
280	27.7	28.0	18.0	7.1	9.0	18.3	11.5	11.5	14.3	0.9	0.8	0.4
288	34.0	36.3	24.5	7.8	8.6	16.3	14.9	14.0	16.3	1.2	1.3	0.5
296	30.9	35.8	26.4	6.5	9.6	14.2	7.4	11.2	12.7	1.1	1.0	0.4
306	26.9	34.2	18.0	7.5	11.5	23.4	20.3	22.9	22.5	1.3	0.9	0.7
311	25.8	31.1	20.8	7.6	9.3	18.2	23.5	24.0	24.6	0.9	0.9	0.7
321	17.6	25.1	17.6	7.0	11.8	7.0	21.9	27.3	21.9	0.9	1.3	0.9
334	20.5	26.0	15.2	8.2	13.8	29.4	24.4	31.9	32.3	1.1	1.2	0.7
347	24.8	23.7	12.8	11.3	12.8	20.9	33.2	34.3	41.5	1.2	1.2	1.1
362	24.8	23.7	12.8	11.3	12.8	20.9	33.2	34.3	41.5	1.2	1.2	1.1
368	9.2	9.2	7.5	6.3	6.3	8.1	29.9	29.9	38.0	0.3	0.3	0.9
376	15.3	14.6	0.6	9.0	11.1	0.8	31.3	40.3	11.2	1.3	1.7	0.1
383	14.3	16.0	5.0	7.8	12.7	7.7	25.6	42.6	33.2	1.0	0.3	1.7
390	0.9	17.4	5.4	0.8	9.6	8.1	8.6	38.1	33.2	0.0	1.8	6.6
400	16.1	14.4	7.4	8.8	7.1	7.4	39.6	34.3	33.2	1.1	2.1	3.7
410	13.9	12.1	5.8	8.0	6.9	5.4	36.6	33.7	23.8	0.8	2.4	9.3
420	9.8	13.0	6.4	6.6	5.6	5.0	28.2	25.0	24.0	1.9	1.0	7.4
431	13.9	13.0	6.4	8.5	5.6	5.0	35.4	25.0	24.0	2.2	1.0	7.4

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
440	13.9	16.8	8.1	8.8	8.3	6.8	37.5	34.8	24.3	3.5	1.9	15.5
448	14.4	12.3	5.5	10.5	8.7	6.7	41.9	30.0	20.3	1.2	4.7	13.5
459	14.3	16.4	8.5	10.2	9.6	6.0	37.5	34.8	16.7	2.0	1.9	17.1
467	14.8	15.8	8.2	10.4	9.1	5.3	32.5	27.3	14.2	1.5	1.7	13.8
474	16.6	13.8	9.0	12.7	11.5	6.5	35.6	30.6	19.9	1.4	4.9	16.2
487	12.9	13.2	6.7	9.6	6.8	4.2	25.3	17.4	12.5	1.4	1.7	9.8
504	11.1	20.9	11.6	7.6	8.9	5.8	28.8	27.8	19.2	0.1	2.5	6.8
526	9.9	18.6	10.3	6.8	8.0	5.2	23.4	22.6	15.7	0.1	2.5	6.7
553	2.0	11.6	9.1	1.6	8.2	9.9	6.7	13.8	9.1	0.1	0.4	0.0
573	10.7	19.7	13.3	9.4	14.0	12.9	16.4	14.8	11.3	0.4	1.4	1.4
602	5.8	11.6	0.5	4.8	13.9	0.1	8.8	3.9	0.0	0.0	0.7	0.0

Table S. 5. 5. Concentrations (μM) of chlorinated ethenes and methane at MW-7D.

Bioremediation pilot study was started on August 18, 2005, day 0.

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
18	41.1	41.5	11.6	0.6	1.4	1.7	6.6	7.4	3.0	0.1	1.7	0.5
22	21.3	38.3	17.7	0.5	0.7	0.7	3.0	6.8	4.4	0.2	1.7	0.7
28	37.5	47.3	27.3	3.2	1.6	1.1	8.4	7.1	5.1	0.6	0.6	0.7
33	29.7	41.7	9.3	0.8	0.9	0.4	4.1	5.4	2.8	0.1	1.8	0.1
42	32.6	47.3	21.2	0.7	1.1	0.6	3.9	5.3	3.2	0.3	0.9	0.7
50	33.1	39.5	16.8	1.1	1.2	0.7	4.4	5.4	3.1	0.9	2.7	0.5
57	41.5	35.9	23.7	0.8	0.8	0.6	4.9	7.9	6.9	1.4	1.9	1.1
73	35.8	28.4	11.3	0.8	0.7	0.6	5.5	5.0	2.7	2.2	1.5	0.7
77	49.2	36.3	13.2	0.9	0.1	0.5	6.2	4.8	2.7	2.0	1.4	0.5
93	28.3	34.9	17.3	0.5	0.7	0.4	0.9	0.9	0.4	0.7	1.4	0.4
105	26.3	29.4	21.7	1.3	1.7	0.9	5.4	10.3	4.3	0.4	0.9	0.7
120	24.2	29.2	27.7	1.2	1.0	0.6	3.5	3.5	3.1	0.1	0.6	0.9
135	21.5	31.9	21.3	0.6	0.6	0.6	3.0	2.8	2.9	0.2	1.2	0.4
154	35.3	35.4	12.8	1.2	1.2	1.0	4.9	4.7	2.4	1.6	1.4	0.0
167	33.2	34.3	11.8	1.6	2.1	1.4	3.6	5.0	2.2	1.4	1.3	0.6
180	33.5	36.2	14.4	1.9	1.9	1.7	4.9	5.5	2.8	1.2	1.7	0.6
194	32.9	34.4	12.5	1.9	2.9	2.3	4.6	4.9	2.1	1.5	1.9	0.6
208	37.7	36.3	4.4	1.6	1.6	0.5	5.0	4.8	1.9	1.8	1.9	0.1
229	5.2	28.3	15.1	0.5	1.4	1.0	1.2	4.3	3.0	0.1	1.2	0.4
245	22.2	29.1	9.7	1.0	1.4	0.6	3.0	4.5	1.7	0.0	0.6	0.1
261	13.3	21.8	16.6	0.9	1.2	1.1	3.2	4.9	3.8	0.0	0.5	0.4
288	18.0	25.9	20.9	1.1	1.4	1.2	3.1	4.7	4.0	0.2	1.0	0.6
311	23.6	29.4	20.0	1.3	1.3	1.1	4.9	5.6	4.3	0.8	1.6	1.0
334	36.6	49.3	22.1	1.4	1.4	0.8	4.8	4.3	2.4	0.9	1.6	0.7
362	36.6	49.3	22.1	1.4	1.4	0.8	4.8	4.3	2.4	0.9	1.6	0.7
376	1.0	21.4	9.3	0.1	0.9	0.8	0.9	1.3	0.5	0.1	0.7	0.4

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
400	22.1	35.6	28.8	0.9	1.3	1.3	3.8	4.4	2.9	0.0	0.1	0.0
431	19.1	58.3	43.5	0.7	1.6	1.6	2.2	6.2	5.1	0.4	1.6	1.1
448	41.9	59.6	42.1	2.2	1.8	1.9	5.8	6.3	4.2	1.5	2.1	1.3
467	45.8	42.2	24.5	1.7	2.0	1.2	4.8	4.5	3.2	1.8	1.7	0.6
553	0.1	12.8	8.4	0.0	3.4	2.1	0.2	4.7	3.1	0.1	0.3	0.4

Table S. 5. 6. Concentrations (μM) of chlorinated ethenes and methane at MW-11D.

Bioremediation pilot study was started on August 18, 2005, day 0.

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
18	0.7	1.4	1.1	0.0	0.4	0.7	1.2	1.1	1.3	0.2	2.1	1.9
25	2.1	1.8	2.5	0.4	0.4	0.4	1.0	0.8	0.7	1.6	1.7	1.3
42	2.6	1.4	4.4	0.2	0.3	0.4	0.2	0.5	0.3	0.4	1.7	0.9
50	3.0	4.0	2.3	0.4	0.5	0.4	0.8	1.4	1.2	2.1	1.8	1.4
57	4.2	2.5	2.7	0.3	1.2	0.5	0.3	0.6	0.5	1.6	1.7	1.5
73	1.6	1.8	1.3	0.2	0.3	0.4	0.2	0.5	0.9	1.9	2.0	1.6
77	2.0	2.0	2.2	0.6	0.6	0.5	1.2	1.1	1.0	1.0	1.1	1.5
93	1.5	0.6	1.5	0.6	0.5	0.3	0.3	1.4	0.7	1.1	1.4	1.2
105	1.3	1.5	1.0	9.9	9.1	2.9	0.0	4.8	3.0	0.4	0.6	1.0
127	1.4	1.4	0.8	0.3	0.5	0.2	0.0	0.0	0.0	1.2	1.2	0.9
241	0.4	0.4	0.5	0.4	0.5	0.5	0.9	0.8	0.8	1.0	1.1	1.4
265	0.3	0.4	0.5	0.3	0.4	0.4	1.3	1.1	0.9	1.6	1.5	1.5
296	0.3	0.4	0.5	0.3	0.4	0.4	1.3	1.1	0.9	1.6	1.5	1.5
306	1.2	0.7	1.0	0.4	0.5	0.4	0.8	1.0	0.6	2.0	1.9	1.9
321	3.6	2.8	2.8	0.3	0.4	0.3	0.5	0.6	0.5	0.8	1.7	0.9
347	3.1	3.5	2.1	1.0	1.1	0.8	1.2	1.5	1.3	0.1	1.0	0.4
362	3.1	3.5	2.1	1.0	1.1	0.8	1.2	1.5	1.3	0.1	1.0	0.4
368	0.7	0.6	0.6	0.3	0.4	0.4	0.3	0.5	0.5	0.1	1.9	1.9
390	1.1	1.5	0.9	0.4	0.4	0.4	0.3	0.5	0.7	0.4	0.7	0.7
440	1.4	0.8	1.2	0.4	0.5	0.5	0.5	1.1	0.7	1.0	1.8	1.5
459	2.0	0.9	1.5	0.4	0.5	0.5	0.5	0.6	0.7	0.0	0.8	0.6
474	3.2	1.9	2.4	0.4	0.5	1.0	1.1	1.1	1.7	0.9	1.6	1.0
490	0.6	0.6	0.5	0.4	0.3	0.4	0.4	0.5	0.5	0.9	0.0	0.3
602	0.4	1.3	1.5	0.5	0.5	0.5	0.4	0.5	0.5	0.1	0.1	0.0

Table S. 5. 7. Concentrations (μM) of chlorinated ethenes and methane at MW-5D.

Bioremediation pilot study was started on August 18, 2005, day 0.

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
18	207.4	24.8	28.5	12.2	1.7	1.8	2.3	0.8	1.2	5.7	1.6	1.8
25	471.1	349.1	121.2	11.1	7.0	3.6	2.3	1.4	1.3	3.8	3.5	1.7
33	243.1	28.5	41.4	4.5	1.1	1.9	1.1	0.7	0.8	4.5	0.1	1.2
46	328.8	118.6	84.6	6.7	3.3	2.7	1.4	1.6	0.9	3.0	1.4	1.2
53	175.9	283.6	76.8	4.1	4.9	2.4	0.7	0.6	0.5	0.5	4.5	1.5
73	367.2	76.3	55.7	7.6	2.1	1.6	1.5	1.6	0.9	5.9	0.2	1.7
77	382.9	200.0	114.2	6.8	4.1	2.5	1.5	0.8	0.7	5.3	3.6	2.3
93	284.7	310.5	67.5	5.6	6.0	1.7	0.8	0.8	1.0	1.7	1.9	0.8
105	251.7	197.7	76.4	5.9	4.7	2.1	1.3	1.2	1.3	2.2	2.0	1.2
120	174.5	153.8	90.0	3.6	3.3	2.2	0.9	1.0	3.0	5.2	4.2	0.3
135	68.4	222.0	177.8	1.6	4.0	4.1	0.8	0.9	1.3	0.2	4.7	3.4
154	333.3	186.6	62.6	7.6	4.7	3.7	1.1	3.0	13.6	4.0	3.8	1.6
167	274.2	386.7	133.2	8.0	9.1	8.1	1.7	2.4	17.6	3.5	4.4	2.4
180	138.0	136.7	25.4	15.2	7.7	5.7	19.1	2.5	14.7	5.4	4.0	1.2
199	118.4	214.1	24.8	15.3	11.8	2.2	48.7	8.3	1.7	2.3	4.6	0.3
211	161.0	167.1	13.2	17.4	15.1	3.3	23.6	18.0	9.9	5.0	4.2	0.1
229	40.4	47.4	59.2	13.0	13.0	8.2	34.3	26.2	9.3	1.8	1.8	2.4
245	125.3	120.9	0.9	32.6	30.7	0.1	32.7	40.1	75.7	4.1	4.4	2.9
261	79.5	126.6	14.4	30.2	26.3	15.2	37.5	22.2	48.6	2.1	2.9	2.6
272	198.2	98.1	11.0	24.0	15.4	3.8	10.9	12.6	21.0	3.4	2.4	2.1
306	170.4	200.0	166.9	15.3	14.8	10.9	13.0	9.2	12.5	0.3	5.3	5.9
334	263.1	139.9	5.4	19.7	10.0	0.5	30.0	15.3	1.1	5.5	3.6	0.1
362	263.1	139.9	5.4	19.7	10.0	0.5	30.0	15.3	1.1	5.5	3.6	0.1
376	0.8	79.2	0.6	0.1	29.5	0.2	0.4	22.3	44.7	0.0	2.4	0.7

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
400	102.7	120.6	13.5	41.3	32.1	1.8	67.6	32.5	51.2	1.2	1.2	5.1
420	249.4	91.6	18.4	27.9	10.5	5.8	18.3	4.2	11.9	5.6	3.6	11.7
440	3.5	297.9	24.1	1.6	21.1	4.8	6.2	9.0	4.3	0.0	5.9	1.0
459	8.3	99.5	86.0	1.1	10.1	10.3	2.5	9.4	10.1	0.0	2.4	3.4
474	11.8	181.2	52.8	1.9	14.0	8.6	4.7	10.4	7.9	0.1	4.5	1.7
553	0.5	133.6	70.7	0.0	22.4	48.1	1.3	7.4	49.0	0.0	4.2	3.7

Table S. 5. 8. Concentrations (μM) of chlorinated ethenes and methane at MW-8S.

Bioremediation pilot study was started on August 18, 2005, day 0.

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
2	5.3	5.6	6.2	0.6	1.3	1.2	0.6	1.0	1.2	0.0	0.2	0.2
4	6.2	6.7	6.5	0.7	1.4	1.2	0.7	1.1	1.0	0.1	0.2	0.2
5	5.4	5.7	5.6	0.8	1.1	1.1	0.8	1.0	1.0	0.0	0.1	0.2
6	5.7	9.0	6.4	0.8	1.3	1.1	1.1	1.3	1.2	0.1	0.3	0.3
7	6.2	6.6	7.4	0.9	1.2	1.3	1.1	1.3	1.3	0.2	0.3	0.2
8	6.1	7.1	8.1	0.8	1.3	1.3	1.1	1.2	1.3	0.2	0.2	0.2
10	2.0	6.7	7.2	0.3	1.2	1.4	0.5	0.9	1.1	0.0	0.2	0.2
12	8.4	6.7	6.2	0.8	1.2	1.2	0.8	1.0	1.1	0.0	0.2	0.2
14	2.5	10.3	7.2	0.4	1.5	1.5	1.1	1.4	1.4	0.1	0.2	0.2
16	6.8	7.8	6.4	1.7	2.8	2.3	2.0	1.7	2.7	0.1	0.3	0.2
18	7.8	6.7	5.8	1.2	1.6	1.6	2.2	1.7	1.9	0.2	0.3	0.2
22	2.9	5.8	6.5	0.5	1.2	1.4	0.6	1.0	1.2	0.0	0.2	0.3
30	5.4	7.0	7.5	1.2	1.5	2.8	2.0	1.1	3.3	0.2	0.3	0.5
42	2.7	2.3	6.5	0.6	0.7	1.7	0.7	0.8	1.4	0.0	0.0	0.4
50	5.8	5.9	6.6	1.4	1.7	2.0	1.7	1.3	1.7	0.3	0.3	0.6
57	6.6	5.4	2.3	1.2	1.8	2.3	1.1	1.5	4.0	0.3	0.5	0.8
60	5.3	5.8	2.6	1.7	1.6	1.0	1.8	2.6	8.6	0.4	0.3	0.5
64	9.2	6.7	6.1	3.8	2.4	3.3	3.9	2.9	9.6	0.3	0.3	0.9
69	5.4	5.8	5.5	1.3	1.6	1.6	1.7	1.9	2.2	0.9	0.9	1.7
75	5.5	5.3	5.0	1.4	1.5	1.5	1.1	1.3	1.8	0.3	0.3	0.8
82	7.1	6.4	5.7	1.6	1.7	1.6	2.0	1.7	2.2	2.3	0.5	0.9
88	5.5	3.3	5.1	1.4	1.1	1.7	2.1	1.3	2.3	1.0	0.1	1.9
95	6.4	6.7	6.1	1.6	2.2	2.4	1.7	2.8	4.9	0.5	0.8	1.7
102	4.7	5.5	3.9	1.3	1.6	1.3	1.4	1.5	2.2	0.4	0.4	2.0

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
109	14.1	5.8	6.3	2.7	1.5	1.6	2.3	2.1	2.1	0.3	0.3	0.6
116	4.9	5.8	6.1	1.4	1.5	1.8	2.0	1.6	2.3	0.4	1.0	2.1
127	3.8	7.5	6.5	1.0	2.3	2.0	1.8	3.6	3.1	0.4	0.7	1.3
137	6.8	2.8	4.8	1.1	0.8	0.9	1.4	1.3	1.2	0.3	0.1	0.4
146	5.3	4.9	3.1	1.3	1.3	1.2	1.4	1.3	1.5	0.3	0.4	0.2
153	5.0	5.0	5.3	1.3	1.3	1.5	1.5	1.5	1.5	0.2	0.2	0.3
159	5.2	5.5	5.2	1.2	1.5	1.5	1.9	1.7	2.0	0.3	0.3	1.0
167	7.4	6.6	4.8	1.7	1.8	1.5	1.8	1.4	1.7	0.2	0.3	0.3
175	4.7	1.8	5.0	1.2	0.6	1.4	1.1	0.8	1.3	0.3	0.0	0.8
180	6.1	10.3	7.2	1.5	1.5	1.6	1.7	1.7	1.9	0.4	0.3	0.3
188	1.0	1.9	7.8	0.3	0.8	1.7	0.6	0.9	2.0	0.0	0.0	1.4
194	9.8	11.0	1.4	2.0	2.1	0.6	2.5	2.4	1.5	0.8	0.7	0.2
199	5.2	5.9	4.0	1.6	1.7	2.4	2.0	1.8	2.8	2.2	1.9	11.2
201	5.0	4.9	3.4	1.4	1.6	1.8	2.1	2.7	3.7	1.3	1.9	1.5
203	3.3	1.8	1.5	1.1	0.7	1.4	2.1	2.1	4.4	0.6	0.7	1.5
205	4.4	6.1	5.0	1.3	1.6	1.5	2.0	2.6	3.6	0.4	1.3	3.1
208	5.3	5.7	4.3	1.5	1.4	1.3	3.3	3.2	4.3	0.9	1.3	2.3
211	6.0	7.5	4.9	1.4	1.8	1.4	2.2	2.3	3.5	0.6	1.1	1.5
219	5.5	5.3	4.2	1.5	1.5	1.4	1.8	1.8	3.1	0.1	0.2	1.0
225	3.8	2.9	2.9	1.1	1.0	1.0	1.5	1.4	1.8	0.1	0.1	0.1
232	5.9	6.1	3.4	1.5	1.6	1.3	1.2	1.3	2.3	0.0	0.0	0.1
241	4.1	4.5	3.8	1.3	1.4	1.4	1.5	1.5	2.0	0.2	0.1	0.3
249	5.0	6.0	5.4	1.6	1.7	1.6	1.6	1.5	1.6	0.3	0.3	0.7
257	5.3	5.5	5.2	1.5	1.5	1.6	1.5	1.5	1.6	0.1	0.2	0.2
265	4.7	5.0	4.9	1.5	1.5	1.5	1.4	1.5	1.5	0.1	0.1	0.1
272	5.6	5.0	6.0	1.6	1.5	1.7	1.4	1.3	1.3	0.0	0.0	0.1
280	3.1	8.3	5.5	1.9	1.9	1.7	1.8	1.8	1.8	0.0	0.1	0.2
288	7.0	11.8	6.9	1.7	1.9	1.7	1.2	1.1	1.4	0.0	0.0	0.1

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
296	6.1	5.4	5.4	1.6	1.5	1.6	1.4	1.3	1.4	0.0	0.0	0.0
306	6.9	6.5	6.5	1.7	1.6	1.7	1.7	1.6	1.7	0.1	0.2	0.2
321	21.3	12.8	6.5	1.5	1.8	1.0	1.3	1.1	1.0	0.0	0.0	0.0
334	6.3	7.5	6.4	1.6	1.9	1.8	1.3	1.4	1.5	0.1	0.2	0.0
347	10.7	6.2	5.0	1.8	1.0	1.9	2.6	0.9	1.1	0.1	0.1	0.1
348	7.6	5.3	10.2	1.3	1.1	2.0	1.5	1.4	1.7	6.3	4.0	19.9
355	6.0	5.8	5.6	2.2	2.0	2.2	2.7	2.8	4.8	1.8	2.3	4.5
360	2.0	7.0	4.1	1.8	1.6	1.2	11.0	2.1	2.6	8.1	10.1	7.5
368	5.1	11.5	5.9	1.3	1.6	1.4	8.3	3.0	2.6	13.9	10.4	8.7
376	5.2	5.2	5.0	1.5	1.5	1.6	1.3	1.3	1.6	0.3	0.3	0.7
383	3.9	4.6	4.0	1.2	1.3	1.4	1.1	1.2	1.6	0.1	0.2	0.5
390	8.0	6.1	5.6	1.3	1.4	1.6	1.1	1.2	1.7	0.2	0.3	0.4
400	10.5	7.6	6.5	2.1	1.8	1.7	2.8	1.9	1.9	0.1	0.0	0.0
410	4.1	4.9	4.7	1.5	1.7	1.7	2.1	1.9	2.1	0.5	0.3	0.5
420	4.3	5.4	4.8	1.1	1.6	1.5	1.2	2.0	2.0	0.3	0.6	0.7
431	4.8	4.6	4.2	1.4	1.4	1.5	1.1	1.3	1.6	0.2	0.1	0.2
440	4.9	6.9	5.9	1.6	1.9	2.4	1.5	1.7	3.0	0.2	0.3	0.6
448	4.0	2.9	5.0	2.1	1.4	2.7	2.0	1.5	3.2	0.2	0.1	0.6
459	7.3	7.7	5.3	1.5	1.8	1.8	1.1	1.3	1.7	0.1	0.3	0.3
467	6.2	7.3	6.2	1.4	1.6	1.7	1.0	1.1	1.7	0.7	0.4	0.4
474	5.0	5.4	4.1	1.5	2.2	1.5	2.6	2.9	2.1	0.2	0.5	0.9
490	2.5	3.6	4.4	0.6	1.1	1.2	0.5	0.8	1.1	0.0	0.1	0.1
504	6.3	6.9	5.1	1.3	1.6	1.7	0.9	1.2	1.6	0.3	0.2	0.1
526	5.6	6.1	4.5	1.1	1.4	1.5	0.7	1.0	1.3	0.3	0.2	0.1
553	0.9	0.6	3.8	0.3	0.1	1.3	0.5	0.2	1.4	0.1	0.1	0.0
573	8.9	8.3	4.3	2.7	2.9	2.2	2.8	3.2	2.8	0.2	0.2	0.2
602	6.7	7.4	5.6	1.6	1.6	1.6	1.0	1.2	1.2	0.0	0.0	0.0

Table S. 5. 9. Concentrations (μM) of chlorinated ethenes and methane at MW-9S.

Bioremediation pilot study was started on August 18, 2005, day 0.

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
1	8.1	8.8	7.2	0.5	0.7	0.6	0.7	0.8	0.8	0.0	0.0	0.0
2	8.4	7.7	8.3	0.6	0.6	0.7	0.8	0.8	0.8	0.1	0.0	0.0
3	6.9	6.9	6.7	0.6	0.6	0.6	0.7	0.7	0.8	0.0	0.0	0.0
4	8.3	7.2	8.3	0.7	0.6	0.6	0.8	0.8	0.8	0.1	0.1	0.0
5	6.7	6.2	6.4	0.6	0.6	0.6	0.7	0.7	0.8	0.1	0.1	0.0
6	7.0	7.6	7.7	0.6	0.8	0.7	1.0	1.1	1.1	0.2	0.2	0.2
7	8.3	8.4	8.3	0.7	0.7	0.7	1.2	1.4	1.0	0.2	0.2	0.2
8	7.7	7.1	8.9	0.7	0.7	0.7	1.1	1.0	1.0	0.2	0.2	0.2
10	7.3	8.0	8.1	0.7	0.7	0.7	0.7	0.8	0.8	0.1	0.1	0.1
12	7.0	9.1	9.7	0.7	0.7	0.7	0.8	0.8	0.8	0.1	0.1	0.0
14	7.2	8.8	9.2	0.8	0.8	0.8	1.5	1.2	1.2	0.2	0.2	0.2
16	5.4	6.4	6.9	0.9	0.7	0.7	2.0	2.1	1.1	0.1	0.1	0.2
18	7.8	8.9	10.0	0.9	0.9	0.9	2.0	1.9	1.7	0.2	0.2	0.1
22	9.8	7.1	7.5	0.9	0.7	0.7	0.8	0.8	0.7	0.2	0.2	0.1
28	5.9	6.0	6.4	0.7	0.8	0.7	1.0	1.2	1.1	0.1	0.1	0.1
33	4.5	6.9	6.4	0.5	0.8	0.8	1.1	1.1	1.1	0.1	0.2	0.2
42	6.1	1.7	6.5	0.8	0.3	0.8	0.9	0.4	0.9	0.1	0.0	0.1
50	4.7	3.9	5.0	0.8	0.6	0.8	0.7	0.9	0.7	0.1	0.0	0.1
57	5.7	5.6	6.7	0.7	0.7	0.8	1.5	1.2	1.1	0.2	0.1	0.1
60	6.4	5.3	8.5	1.3	1.4	0.8	1.7	2.4	1.4	0.2	0.1	0.2
64	5.2	5.0	5.2	0.9	1.0	1.1	1.6	2.1	1.9	0.1	0.2	0.2
69	5.3	5.1	5.5	0.9	0.9	0.9	1.6	1.5	1.4	0.2	0.2	0.2
75	4.4	4.5	4.3	0.7	0.8	0.7	1.3	1.1	0.9	0.0	0.1	0.1

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
82	5.2	5.6	11.8	0.8	0.8	0.8	1.3	1.2	1.2	0.2	0.2	0.1
88	5.0	4.4	5.0	0.9	0.8	0.8	1.3	1.1	1.2	0.2	0.1	0.1
95	5.3	6.0	5.2	1.0	1.0	1.0	1.9	1.5	1.5	0.3	0.3	0.3
102	3.7	5.3	5.2	1.2	1.1	1.0	2.3	5.2	1.5	0.2	0.3	0.2
109	5.6	5.1	5.4	1.0	0.9	0.9	2.9	2.6	1.9	0.3	0.2	0.2
116	5.1	4.7	2.8	0.9	1.0	0.8	1.4	2.1	1.4	0.2	0.2	0.1
127	7.8	5.6	5.4	1.2	1.2	0.9	2.3	2.2	1.1	0.5	0.5	0.2
137	2.3	2.8	3.2	0.6	0.7	0.6	1.5	1.4	1.3	0.2	0.2	0.1
146	4.3	4.4	4.8	0.7	0.7	0.7	0.8	0.8	0.8	0.2	0.2	0.0
153	3.9	5.3	4.5	0.7	0.8	0.7	0.9	0.8	0.9	0.2	0.1	0.0
159	4.0	4.1	4.4	0.8	0.8	0.8	1.2	1.2	1.2	0.3	0.2	0.1
167	5.5	4.6	4.5	1.1	0.9	0.9	1.3	1.2	1.2	0.3	0.3	0.2
175	5.7	6.2	5.2	0.9	0.9	0.9	0.9	0.9	0.9	0.4	0.2	0.0
180	6.2	2.4	5.3	1.0	0.5	0.9	1.3	2.2	2.1	0.3	0.1	0.1
188	5.7	5.8	6.2	0.8	0.9	0.9	0.8	0.8	0.8	0.3	0.3	0.1
199	7.2	6.3	4.8	0.9	0.9	0.7	0.9	0.9	0.8	0.5	0.0	0.0
201	5.3	5.1	5.1	1.0	0.9	1.0	1.4	1.4	1.4	0.8	0.8	0.6
203	3.8	3.5	3.2	0.7	0.6	0.6	1.6	1.2	1.2	0.8	0.6	0.4
205	8.0	8.0	6.5	0.9	0.9	0.9	1.3	1.4	1.1	0.9	0.5	0.1
208	6.0	5.6	6.4	0.9	0.9	0.9	1.3	1.3	1.8	0.7	0.4	0.2
211	9.1	7.7	7.8	0.9	0.8	0.8	0.9	0.9	0.9	1.0	0.8	0.4
216	7.0	6.2	7.1	0.8	0.7	0.8	1.0	0.9	0.9	2.7	1.9	1.1
219	11.2	7.1	7.1	1.2	1.0	1.0	1.6	1.6	1.6	4.2	1.4	1.0
225	5.8	6.4	5.7	0.7	0.8	0.8	1.0	1.3	1.4	3.8	2.6	1.2
232	8.6	9.1	8.7	0.9	1.0	0.9	1.1	1.0	1.1	1.0	0.1	0.0
241	7.0	6.8	6.7	0.8	0.8	0.8	0.9	0.9	1.3	2.6	2.2	1.9
249	8.3	8.2	8.1	0.8	0.9	0.8	0.9	1.5	1.2	3.2	1.9	0.7

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
257	7.5	8.4	8.8	0.7	0.8	0.8	0.8	1.3	0.9	2.7	2.0	2.0
265	7.5	9.5	9.8	0.7	1.0	1.0	0.8	1.4	1.4	2.7	0.7	0.6
272	7.1	8.8	9.0	0.7	0.8	0.8	0.8	0.9	1.0	0.6	0.5	0.2
280	6.4	5.9	7.2	0.7	0.7	0.9	1.1	1.1	1.3	0.6	0.4	0.6
288	7.8	5.5	10.5	0.6	0.6	0.8	0.8	0.8	0.9	0.0	0.0	0.0
296	8.9	8.7	9.3	0.9	0.8	0.9	0.9	1.0	1.0	0.2	0.1	0.1
306	8.7	9.4	8.8	0.8	0.8	0.8	1.1	1.2	1.2	0.4	0.4	0.5
334	8.5	8.4	8.1	1.0	1.0	0.9	0.8	0.9	1.0	0.1	0.1	0.0
347	8.7	9.2	8.6	1.6	1.8	1.3	1.9	1.7	1.4	0.1	0.1	0.1
355	6.1	6.2	6.0	1.0	1.1	1.1	1.3	1.3	1.3	3.7	4.8	5.4
360	3.1	3.0	4.0	0.5	0.4	0.6	0.3	0.4	0.5	0.4	0.8	1.0
368	4.8	6.0	6.1	0.9	1.0	1.0	0.7	0.7	0.7	1.1	1.6	1.8
376	3.7	4.7	4.2	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.8
383	3.4	3.7	3.6	0.7	0.7	0.7	0.6	0.6	0.7	0.3	0.3	0.4
390	4.5	4.0	4.4	0.8	0.8	0.9	0.7	0.7	0.8	0.4	0.3	0.3
400	7.4	3.6	4.3	1.0	0.8	0.9	0.8	0.8	0.8	0.0	0.0	0.0
410	2.6	2.8	3.2	0.9	0.9	0.9	1.1	1.0	1.2	19.1	18.3	14.2
420	3.2	1.8	3.5	0.9	0.6	1.0	2.0	1.3	1.8	24.2	4.4	21.5
431	4.3	4.0	3.6	0.9	0.9	0.9	0.9	0.9	1.0	11.1	20.5	22.4
440	3.5	5.3	3.9	0.8	1.0	1.0	1.0	1.1	1.2	8.9	14.3	9.9
448	4.7	3.9	3.9	1.9	1.4	1.8	2.6	2.1	2.1	4.0	5.1	28.6
459	4.0	5.7	2.9	1.0	1.1	0.8	0.8	1.0	1.0	9.7	6.4	0.2
467	4.1	4.8	3.2	0.9	0.9	0.8	0.7	0.7	0.9	34.9	45.9	0.1
474	2.8	3.3	3.5	2.5	3.5	1.6	2.1	2.5	2.2	2.1	7.8	1.7
487	4.2	3.4	15.4	0.8	0.7	1.2	0.6	0.6	0.8	7.0	4.4	2.4
490	4.1	4.4	1.6	0.7	0.8	0.4	0.7	0.8	0.6	6.7	27.9	0.0
504	7.4	7.9	2.6	1.2	1.3	0.6	2.7	2.3	1.6	0.1	0.1	0.0

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
526	6.6	7.0	2.3	1.1	1.2	0.5	2.2	1.9	1.3	0.1	0.1	0.0
553	3.1	1.3	3.6	0.7	0.3	0.7	0.6	0.4	0.7	0.1	0.1	0.1
573	5.9	5.2	5.2	1.9	2.1	2.8	3.6	4.8	4.6	0.2	0.2	0.3
602	5.6	3.8	3.6	1.0	1.0	1.0	0.7	0.7	0.6	0.0	0.0	0.0

Table S. 5. 10. Concentrations (μM) of chlorinated ethenes and methane at MW-10S.

Bioremediation pilot study was started on August 18, 2005, day 0.

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
8	17.02	14.20	8.24	1.07	1.45	1.16	1.38	1.63	1.47	0.19	0.29	0.10
10	16.35	12.93	8.57	1.10	1.25	0.97	1.13	1.20	1.09	0.12	0.19	0.03
12	14.68	12.24	14.82	1.00	1.05	1.29	1.03	1.07	1.27	0.05	0.09	0.20
14	6.68	13.05	2.81	0.61	1.28	1.74	1.45	1.61	1.83	0.07	0.18	0.26
16	14.68	13.35	12.54	0.98	1.24	1.53	1.27	1.43	1.58	0.16	0.25	0.23
18	17.05	13.37	8.74	1.09	1.50	1.60	1.85	1.77	1.95	0.18	0.24	0.13
20	6.68	13.05	2.81	0.61	1.28	1.74	1.45	1.61	1.83	0.07	0.18	0.26
22	14.40	12.93	12.68	1.01	1.27	1.74	1.10	1.17	1.43	0.04	0.15	0.24
25	20.84	16.57	16.75	1.03	1.49	2.39	1.21	1.51	2.00	0.16	0.15	0.35
28	11.15	10.72	10.71	0.86	1.24	1.60	1.13	1.41	1.60	0.10	0.11	0.20
30	14.02	16.06	12.38	0.86	1.44	2.12	1.15	1.21	1.72	0.11	0.17	0.33
33	13.97	13.67	11.74	0.99	1.73	2.10	1.26	1.59	1.87	0.13	0.17	0.26
37	9.71	9.32	7.02	0.64	1.21	1.17	0.72	0.98	0.90	0.02	0.09	0.06
42	14.14	13.55	12.64	0.64	0.96	1.74	0.62	1.08	1.41	0.03	0.06	0.21
46	13.67	18.82	12.66	1.53	1.46	1.47	2.13	1.97	1.37	0.06	0.07	0.17
53	11.33	11.35	13.12	0.75	0.76	1.90	1.27	1.34	1.52	0.05	0.10	0.24
60	11.82	10.90	10.05	1.66	1.56	4.57	4.30	1.51	1.51	0.11	0.17	0.17
64	10.16	11.92	11.77	1.19	1.60	1.65	2.74	2.37	2.48	0.09	0.19	0.20
69	11.11	11.50	11.62	1.21	1.40	1.55	2.04	1.95	2.04	0.16	0.20	0.23
75	9.27	10.43	10.66	0.78	1.22	1.48	1.49	1.74	2.28	0.03	0.05	0.07
82	10.56	10.90	12.38	0.88	1.24	2.07	1.09	1.70	3.83	0.10	0.05	0.35
88	10.12	10.32	4.61	0.88	2.13	1.24	1.44	3.34	3.99	0.05	0.18	0.04
95	4.00	11.17	12.54	2.15	1.40	1.80	5.82	3.88	5.63	0.20	0.29	0.28

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
102	0.95	10.75	11.03	1.13	1.84	1.95	2.17	4.16	4.44	0.21	0.33	0.10
116	10.55	9.29	9.42	1.41	1.37	1.39	2.51	2.39	2.46	0.28	0.30	0.22
127	8.30	10.04	11.64	1.21	1.48	1.34	3.64	3.93	2.76	0.19	0.27	0.15
137	5.80	6.19	6.27	0.91	1.02	0.89	2.12	2.53	2.01	0.18	0.24	0.15
146	10.85	11.36	10.09	1.36	1.26	1.25	2.05	1.94	1.94	0.21	0.23	0.04
153	12.03	10.95	2.61	1.53	1.43	0.44	1.96	1.91	0.96	0.17	0.23	0.01
159	10.07	8.58	10.52	1.46	1.25	1.35	2.06	1.92	2.05	0.17	0.14	0.16
167	10.81	10.59	10.85	1.62	1.56	1.59	1.80	2.09	1.96	0.14	0.11	0.06
175	11.30	10.13	2.01	1.34	1.31	0.43	1.50	1.49	0.85	0.10	0.05	0.01
180	11.48	13.94	10.44	1.43	1.52	1.38	1.98	2.17	2.06	0.13	0.13	0.11
188	12.72	15.15	12.20	1.42	1.57	1.49	1.37	1.46	1.50	0.05	0.05	0.01
194	10.20	12.91	14.34	2.90	2.15	2.35	2.63	2.12	2.36	0.86	0.88	0.35
201	12.16	10.57	11.12	2.09	1.40	1.46	2.95	2.22	2.17	0.28	0.32	0.30
205	13.29	13.31	11.74	1.37	1.53	2.08	1.46	1.55	1.81	0.08	0.35	0.29
208	9.70	9.71	10.41	1.84	1.71	1.92	1.68	1.85	1.99	0.37	0.36	0.35
211	12.28	12.45	14.11	1.91	1.84	1.91	1.51	1.64	1.59	0.62	0.33	0.48
216	11.50	11.41	11.34	2.22	2.20	2.12	2.01	1.81	2.21	1.32	1.49	1.13
219	8.62	9.98	8.25	3.01	3.35	3.94	2.80	2.94	4.07	1.21	1.95	1.93
225	0.28	0.16	0.30	0.00	0.00	0.00	16.90	16.31	13.28	3.66	3.06	0.22
229	0.09	0.20	0.14	0.00	0.19	0.00	19.31	20.21	18.99	2.87	2.68	2.81
232	0.28	0.25	0.24	0.00	0.00	0.06	16.99	17.14	16.60	3.49	3.58	3.55
236	0.45	0.35	0.11	0.04	0.05	0.00	11.44	11.94	8.25	3.90	4.06	0.01
241	1.83	2.63	0.13	0.39	0.46	0.00	12.51	13.02	16.60	2.08	2.57	2.63
245	2.45	3.57	2.02	0.50	0.62	0.47	13.42	13.48	14.97	1.22	3.49	3.41
249	3.39	3.26	1.41	0.49	0.64	0.37	12.64	12.81	14.76	2.45	3.93	3.84
252	2.35	2.83	3.25	1.88	2.04	2.21	10.32	10.57	11.35	2.89	2.89	2.95
257	6.05	6.80	7.67	1.74	1.86	2.01	7.95	7.52	7.71	4.14	4.22	4.73

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
265	1.30	0.53	1.84	0.36	0.21	0.48	11.82	16.20	13.77	3.24	3.77	4.48
272	0.87	0.45	1.04	0.25	0.37	0.22	14.08	16.52	16.06	3.85	3.50	4.05
280	0.31	0.96	1.08	0.17	0.60	0.63	16.45	14.99	15.86	3.31	4.13	3.68
288	5.92	6.85	4.71	1.74	1.59	1.40	9.71	8.53	11.26	8.55	8.23	9.43
296	1.30	0.53	1.84	0.36	0.21	0.48	11.82	16.20	13.77	3.24	3.77	4.48
306	9.34	8.85	9.50	1.51	1.52	1.67	6.69	6.93	6.61	9.30	11.51	11.39
311	8.51	8.42	8.62	1.42	1.43	1.53	6.30	5.88	6.06	7.72	5.89	8.50
321	10.71	6.66	11.69	1.18	0.86	1.40	5.01	3.50	4.36	14.91	0.07	13.48
334	0.64	7.26	12.05	0.07	1.18	1.74	14.79	4.08	3.59	25.95	1.88	0.22
347	1.01	11.39	13.49	0.11	1.87	2.07	15.93	4.69	4.19	20.02	11.90	0.42
355	4.95	9.79	10.83	2.94	1.63	1.97	9.81	5.02	4.26	9.88	9.92	10.65
360	0.87	5.57	8.46	0.86	0.83	1.24	8.06	3.45	3.14	5.82	6.29	9.51
368	5.55	8.57	9.49	0.99	1.27	1.55	6.81	2.97	2.99	11.09	13.28	11.49
376	4.14	9.26	4.28	0.96	1.46	0.85	5.03	3.77	2.59	0.13	16.14	0.03
383	5.33	7.99	7.89	1.17	1.37	1.40	6.81	3.43	3.55	10.31	7.34	0.98
390	6.32	9.06	8.85	1.05	1.45	1.34	6.75	3.61	3.63	11.41	12.89	14.49
400	5.65	6.54	8.71	1.16	1.16	1.50	6.27	4.43	3.92	11.41	10.52	6.07
410	4.22	6.72	7.23	0.89	1.18	1.41	6.90	4.32	4.00	8.41	8.85	11.41
420	5.49	8.21	7.99	1.42	1.56	1.56	6.10	4.46	4.11	8.80	8.08	8.33
431	5.93	8.31	5.73	1.32	1.48	1.20	6.84	3.99	2.73	10.90	6.67	5.23
440	7.10	13.50	10.00	1.52	1.92	1.69	8.27	3.49	3.05	5.19	5.53	6.37
448	6.60	6.60	9.73	1.95	1.95	2.44	8.18	8.18	5.10	8.87	8.87	8.03
459	5.97	12.75	10.27	1.20	1.67	1.54	6.22	2.60	3.19	4.94	4.79	6.22
467	7.83	11.09	9.18	1.24	1.40	1.31	4.34	2.89	2.54	4.91	5.36	5.41
474	5.36	7.43	8.91	0.95	1.28	1.43	4.73	2.92	3.23	6.74	4.90	5.81
487	6.34	7.67	3.92	1.83	1.52	0.68	5.32	2.79	0.95	7.79	4.37	0.67
504	2.56	6.69	4.98	0.67	1.07	1.00	0.51	0.86	0.94	0.25	0.01	0.01

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
526	2.28	5.95	4.42	0.60	0.97	0.90	0.41	0.70	0.77	0.24	0.01	0.01
553	5.57	5.16	0.89	1.01	1.01	0.23	2.17	1.86	0.87	0.08	0.08	0.08
573	8.05	6.32	7.49	4.54	3.42	3.35	5.13	5.44	4.73	0.16	0.22	0.18
602	7.04	8.42	7.86	1.53	1.66	1.61	1.88	2.06	1.99	0.01	0.05	0.01

Table S. 5. 11. Concentrations (μM) of chlorinated ethenes and methane at MW-12S.

Bioremediation pilot study was started on August 18, 2005, day 0.

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
20	2.48	10.28	7.22	0.35	1.50	1.45	1.08	1.41	1.42	0.08	0.22	0.20
30	7.54	8.60	7.96	1.63	1.89	1.91	2.74	7.88	5.42	0.19	0.27	0.22
37	9.26	5.51	5.69	1.56	1.51	2.61	2.38	2.61	2.97	0.15	0.16	0.09
46	4.78	5.88	2.68	0.78	1.08	0.74	1.47	1.99	1.61	0.12	0.17	0.07
50	6.00	1.46	8.94	1.39	0.46	1.84	2.56	1.55	4.33	0.05	0.11	0.29
53	6.81	7.66	3.52	1.63	1.80	1.07	2.84	3.22	2.64	0.22	0.28	0.02
64	7.33	8.38	8.55	1.59	1.97	2.16	3.12	4.26	5.42	0.16	0.19	0.19
73	5.02	4.70	4.62	1.15	1.24	1.29	2.73	3.03	3.75	0.26	0.28	0.28
77	3.94	8.33	7.60	1.05	1.91	1.90	2.77	4.50	5.18	0.06	0.25	0.38
88	5.75	7.79	5.96	4.08	1.92	1.69	2.73	3.48	3.37	0.05	0.21	0.22
95	7.71	6.64	2.06	1.68	1.72	0.84	3.80	4.15	3.24	0.25	0.21	0.04
102	3.65	9.93	3.60	0.86	2.85	1.70	2.63	4.50	2.90	0.29	0.30	0.29
116	4.53	6.03	2.94	1.24	1.57	1.02	2.89	3.45	2.87	0.07	0.26	0.10
127	8.07	4.33	1.64	1.63	1.40	0.52	4.23	3.96	1.59	0.35	0.08	0.17
137	4.37	4.26	4.17	1.25	1.63	1.51	2.94	3.68	3.41	0.26	0.13	0.17
146	7.23	6.41	3.27	1.79	1.76	1.07	3.01	3.43	2.89	0.11	0.04	0.02
153	1.58	7.06	6.27	0.57	1.87	1.80	1.55	3.43	3.50	0.01	0.26	0.22
159	7.08	7.28	7.32	1.80	1.96	1.81	3.03	3.51	3.75	0.17	0.15	0.18
167	6.91	6.24	6.23	1.78	1.83	2.02	3.55	3.78	4.91	0.15	0.15	0.14
175	6.56	16.05	6.76	1.85	2.02	2.07	3.15	3.79	4.75	0.19	0.21	0.23
180	7.53	8.55	9.42	1.85	1.94	1.97	3.95	4.16	4.48	0.15	0.22	0.14
188	7.84	6.42	5.78	1.74	1.67	1.40	3.04	3.12	2.95	0.16	0.05	0.01
201	7.63	6.99	6.48	2.08	2.04	2.00	4.22	3.83	4.64	0.12	0.13	0.13

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
208	7.32	8.01	7.31	2.09	2.05	2.06	3.66	3.87	4.99	0.13	0.17	0.15
219	6.49	5.32	6.03	1.88	1.78	1.89	3.88	3.87	4.58	0.13	0.11	0.11
225	4.21	4.71	3.86	1.46	1.57	1.48	3.74	3.99	4.62	0.18	0.20	0.18
236	5.20	5.71	5.98	1.44	1.56	1.49	2.89	3.16	3.22	0.03	0.15	0.08
241	5.05	5.39	5.02	1.69	1.80	1.84	3.58	3.85	4.17	0.14	0.16	0.17
249	3.74	4.64	4.83	1.33	1.57	1.59	3.40	3.56	3.85	0.17	0.15	0.11
257	2.09	5.17	5.03	0.83	1.57	1.58	2.41	3.46	3.86	0.09	0.21	0.23
265	4.67	4.06	5.45	1.67	1.49	1.83	3.24	3.37	3.74	0.15	0.08	0.15
280	4.18	4.72	3.79	1.72	1.86	1.69	3.20	3.91	4.25	0.11	0.11	0.14
288	5.35	6.05	4.49	1.47	1.63	1.40	2.87	3.26	3.23	0.04	0.05	0.02
296	4.67	4.06	5.45	1.67	1.49	1.83	3.24	3.37	3.74	0.15	0.08	0.15
311	4.73	5.31	4.90	1.88	1.87	1.80	3.63	3.85	4.06	0.16	0.18	0.20
321	6.31	7.00	6.73	1.86	1.80	1.79	3.05	3.35	3.46	0.17	0.25	0.30
334	5.71	5.91	6.10	1.95	1.90	1.95	3.16	3.41	3.71	0.17	0.22	0.23
347	5.92	6.28	5.71	2.28	2.19	1.90	4.06	4.45	4.64	0.15	0.27	0.17
362	5.92	6.28	5.71	2.28	2.19	1.90	4.06	4.45	4.64	0.15	0.27	0.17
368	3.39	3.25	2.51	1.40	1.39	1.15	3.43	3.97	3.97	0.10	0.04	0.10
376	4.36	5.52	4.95	1.61	1.82	1.72	3.41	3.88	4.16	0.30	0.37	0.41
383	4.81	5.04	5.00	1.59	1.66	1.68	2.93	3.29	3.89	0.29	0.22	0.20
390	3.84	5.60	5.56	1.37	1.97	1.91	3.02	3.99	4.71	0.02	0.37	0.33
400	4.16	6.03	4.82	1.69	1.93	1.77	3.04	3.73	4.25	0.02	0.22	0.26
410	2.69	4.90	3.10	1.20	1.84	1.34	2.55	3.86	4.00	0.11	0.23	0.15
420	6.39	SNC	SNC	1.49	SNC	SNC	2.88	SNC	SNC	0.53	SNC	SNC
431	6.35	6.04	5.98	2.08	1.97	2.13	3.74	3.71	4.93	0.50	0.39	0.43
440	5.59	5.89	6.54	1.75	1.95	2.13	3.12	3.68	5.36	0.55	0.24	0.28
448	5.57	4.71	6.23	2.38	2.09	2.23	4.32	3.70	5.04	0.23	0.41	0.35
459	3.97	1.91	6.65	1.39	0.85	2.07	2.67	2.35	4.65	0.02	0.01	0.27

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
467	5.33	1.39	5.81	1.63	0.62	1.78	2.63	1.71	3.24	0.28	0.03	0.30
474	6.43	7.84	6.26	2.47	3.21	2.84	4.30	5.20	6.05	0.47	0.29	0.37
487	2.24	4.71	6.66	0.53	1.49	2.15	1.31	2.72	4.39	0.01	0.10	0.31
504	1.15	5.33	1.89	0.64	1.81	2.01	2.43	3.73	11.2 5	0.05	0.10	0.51
526	1.02	4.73	1.68	0.58	1.64	1.82	1.97	3.03	9.15	0.05	0.10	0.51
553	3.73	3.33	3.43	1.42	1.44	1.44	2.39	2.53	2.76	0.15	0.04	0.05
573	5.53	7.23	5.87	0.87	2.97	2.64	2.50	4.10	4.37	0.18	0.16	0.12
602	0.14	4.88	3.48	0.08	1.92	1.48	0.36	2.69	2.68	0.01	0.02	0.01

SNC – Sample not collected

Table S. 5. 12. Concentrations (μM) of chlorinated ethenes and methane at MW-7S.

Bioremediation pilot study was started on August 18, 2005, day 0.

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
18	1.94	3.46	2.58	0.63	0.88	0.83	1.35	2.04	2.08	0.12	0.22	0.14
22	2.84	2.95	2.67	0.63	0.66	0.71	0.96	1.08	1.44	0.19	0.27	0.22
28	3.70	4.16	4.67	0.76	2.07	2.61	1.47	3.88	6.16	0.15	0.16	0.09
33	3.32	3.47	3.53	0.73	0.69	0.82	1.13	1.38	1.50	0.12	0.17	0.07
42	2.87	2.95	3.34	0.75	0.76	0.90	1.05	1.27	1.51	0.05	0.11	0.29
50	2.99	5.69	3.29	0.85	0.92	0.79	1.21	1.31	1.37	0.22	0.28	0.02
57	3.90	3.98	3.90	0.59	0.65	0.67	0.84	1.00	1.06	0.16	0.19	0.19
73	2.95	3.72	3.17	0.51	0.61	0.67	1.08	1.31	1.68	0.26	0.28	0.28
77	4.91	3.20	2.80	0.69	0.68	0.78	1.38	1.44	1.72	0.06	0.25	0.38
93	2.51	1.96	2.49	0.51	0.48	0.55	0.79	0.90	1.11	0.05	0.21	0.22
105	2.51	2.32	4.00	0.55	0.63	1.96	1.18	1.26	3.56	0.25	0.21	0.04
120	3.16	2.41	13.42	0.43	0.40	1.34	0.69	0.77	2.05	0.29	0.30	0.29
135	4.55	3.11	2.86	0.49	0.38	0.50	0.98	0.93	1.01	0.07	0.26	0.10
154	2.75	2.63	2.32	0.63	0.65	0.69	1.01	1.21	1.47	0.35	0.08	0.17
167	4.50	3.50	1.95	1.33	1.26	0.63	2.76	6.36	1.62	0.26	0.13	0.17
180	4.66	4.01	4.08	0.79	0.90	0.93	1.60	1.64	2.03	0.11	0.04	0.02
194	4.89	4.91	4.51	1.20	1.32	1.17	1.89	1.91	1.85	0.01	0.26	0.22
208	2.55	2.62	2.88	0.85	0.85	0.92	1.72	1.63	1.67	0.17	0.15	0.18
229	2.47	3.01	2.77	0.89	0.92	0.90	1.89	1.84	1.90	0.15	0.15	0.14
245	2.20	2.25	2.56	0.81	0.75	0.79	1.10	1.06	1.04	0.19	0.21	0.23
261	2.19	2.42	2.55	0.80	0.82	0.84	1.18	1.19	1.16	0.15	0.22	0.14
288	2.84	0.85	3.02	0.92	0.21	0.94	1.24	0.29	1.31	0.16	0.05	0.01
311	2.86	2.57	2.44	0.79	0.88	0.82	1.46	1.54	1.43	0.12	0.13	0.13
334	0.45	1.06	3.40	0.06	0.20	0.88	0.10	0.31	1.33	0.13	0.17	0.15
362	0.45	1.06	3.40	0.06	0.20	0.88	0.10	0.31	1.33	0.13	0.11	0.11
376	2.25	1.72	4.54	0.62	0.47	0.81	0.82	0.72	1.25	0.18	0.20	0.18

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
400	5.19	3.54	2.77	0.51	0.62	0.67	0.64	0.96	1.45	0.03	0.15	0.08
431	2.56	2.27	1.99	0.60	0.73	0.77	0.72	1.02	1.50	0.14	0.16	0.17
448	2.84	2.93	2.43	0.78	1.24	1.21	1.22	1.95	1.91	0.17	0.15	0.11
467	2.01	3.17	1.37	0.49	0.74	0.46	0.59	0.93	0.98	0.09	0.21	0.23
553	2.27	2.80	1.67	0.58	0.74	0.46	0.63	0.77	0.90	0.15	0.08	0.15

Table S. 5. 13. Concentrations (μM) of chlorinated ethenes and methane at MW-11S.

Bioremediation pilot study was started on August 18, 2005, day 0.

Time (Days)	PCE			TCE			DCE			Methane		
	top	mid	bot	top	mid	bot	top	mid	bot	top	mid	bot
18	6.63	5.25	5.53	0.58	0.55	1.22	0.94	0.84	1.17	0.26	0.23	0.19
25	4.10	7.04	5.72	0.45	0.62	0.65	0.83	1.01	1.06	0.12	0.27	0.21
42	4.00	5.87	5.14	0.31	0.54	0.57	0.53	0.68	0.82	0.02	0.15	0.09
50	4.51	8.02	3.63	0.54	0.59	0.51	1.42	1.09	0.94	0.18	0.23	0.08
57	4.73	6.40	5.30	0.43	0.51	0.50	0.61	0.66	0.67	0.08	0.15	0.10
73	2.59	2.83	4.45	0.38	0.38	0.41	1.20	0.96	0.67	0.11	0.15	0.20
77	6.43	5.20	5.32	0.78	0.68	0.72	1.19	1.20	1.27	0.20	0.21	0.17
93	3.63	3.65	3.63	0.36	0.38	1.43	0.60	0.62	1.08	0.05	0.14	0.05
105	3.25	3.46	3.53	0.41	0.46	1.68	0.61	1.52	1.92	0.25	0.26	0.15
127	6.65	3.63	3.92	0.96	0.47	0.47	1.65	0.50	0.59	0.39	0.19	0.18
241	3.38	3.27	3.49	0.48	0.46	0.48	0.85	0.91	0.84	0.09	0.14	0.10
265	3.59	3.69	3.30	0.45	0.45	0.48	0.81	0.83	0.88	0.12	0.14	0.15
296	3.59	3.69	3.30	0.45	0.45	0.48	0.81	0.83	0.88	0.12	0.14	0.15
306	3.88	3.93	4.74	0.50	0.48	0.53	0.90	0.86	0.93	0.11	0.16	0.12
321	5.23	5.65	5.32	5.23	5.65	5.32	5.23	5.65	5.32	5.23	5.65	5.32
347	4.72	4.80	5.08	0.67	0.64	0.57	1.21	1.17	1.16	0.08	0.14	0.11
362	4.72	4.80	5.08	0.67	0.64	0.57	1.21	1.17	1.16	0.08	0.14	0.11
368	6.35	5.34	5.29	1.16	0.53	1.05	0.99	0.89	0.66	0.18	0.16	0.16
390	4.25	3.83	3.81	0.42	0.41	0.43	0.55	0.66	0.65	0.20	0.18	0.05
440	3.86	0.60	3.62	0.50	0.12	0.48	0.57	0.41	0.77	0.18	0.04	0.21
459	3.87	4.19	4.07	0.50	0.53	0.53	0.53	0.68	0.76	0.29	0.24	0.18
474	6.18	5.55	5.22	1.06	0.55	1.06	1.74	1.05	1.64	0.31	0.34	0.17
490	2.55	3.46	3.29	0.47	0.46	0.47	0.72	0.56	0.63	0.03	0.06	0.08
602	8.02	2.97	2.75	0.92	0.60	0.48	0.71	0.59	0.52	0.04	0.02	0.05

----------End of Supplement----------