

**CSSA B-3 BIOREACTOR OPERATIONS  
ANNUAL PERFORMANCE STATUS REPORT  
(QUARTER 25 – QUARTER 28, MAY 2013 – APRIL 2014)**

**JULY 16, 2014**

---

---

This status report summarizes the operation of a bioreactor at Solid Waste Management Unit (SWMU) B-3 from May 2013 through April 2014, comprising the sixth year of bioreactor operations and monitoring since system start-up. This status report includes descriptions of current conditions, field observations, analytical results, and an anticipated schedule of activities for the next reporting period. Analytical results from monthly and quarterly regulatory and performance sampling through April 2014 are attached for reference. Parsons personnel working on this project during the reporting period include Ken Rice, Samantha Elliott, Julie Bouch, Adrien Lindley, Elisa Rice, Michael Zugelder, Scott Pearson, and William Martin.

***Executive Summary***

Site conditions were mixed through the year. Above average precipitation was recorded in May, September, and October, 2013 otherwise rainfall totals were below average. For the year (May, 2013 through April, 2014) a total of 28.28 inches were recorded, nearly 10 inches below average. Moderate to exceptional drought conditions continue to persist and have resulted in a net deficit which is reflected in low aquifer water levels. Injection of extracted groundwater continued through the year with few interruptions. Minor interruptions include: system maintenance, reaching automatic cut-off levels in the wells and/or storage tank, and B-3 bioreactor system upgrade activities.

During the reporting period, pumping at EXW-02, and CS-MW16-LGR and –CC was temporarily suspended for maintenance and electrical system upgrades. EXW-02 was off-line for 5 months and CS-MW16-LGR and –CC were off-line for 2 months. Additionally, operation of EXW-01 was suspended for the year for electrical, SCADA, and metering repairs. Through the reporting period, approximately 19,149,989 gallons of groundwater was extracted from CS-MW16-LGR, CS-MW16-CC, B3-EXW02, B3-EXW03, B3-EXW04, and B3-EXW05 and were injected into bioreactor trenches 1 and 6. The majority of extracted groundwater, ~7,693,000 was extracted from B3-EXW03, followed by ~4,912,000 gallons from CS-MW16-CC. CS-MW16-LGR and EXWs -02, -04, and -05 contributed lesser volumes of ~2,060,000, ~1,852,000, ~626,000, and ~2,003,000 gallons, respectively. Since the start of normal operations a total of 92,968,400 gallons of extracted groundwater have been injected into the bioreactor.

Data from monitoring efforts indicate that the B-3 bioreactor has continued to maintain appropriate geochemical conditions for effective anaerobic dechlorination of chlorinated aliphatic hydrocarbons (CAHs). Geochemical parameters indicating optimal conditions include the following:

- Concentrations of dissolved oxygen (DO) are generally less than 0.5 milligrams per liter (mg/L) and oxidation-reduction potential (ORP) values are less than 100 millivolts (mV), indicating an anaerobic environment conducive to dechlorination of CAHs within the trenches;
- Production of methane indicating that fermentation is occurring; and

- Hydrogen concentrations are greater than 1.0 nanomoles per liter (nmol/L), indicating that there is sufficient electron donor present to stimulate anaerobic dechlorination of CAHs.

Analytical results for samples collected in trench sumps provide evidence that biotic and abiotic dechlorination of tetrachloroethene (PCE) and trichloroethene (TCE) is occurring. The presence of the end product ethene provides evidence that the biotic reductive dechlorination process appears to be the major pathway for degradation of CAHs within trenches 1 and 6. Additionally, two other degradation mechanisms, both biotic and abiotic, appear to be occurring within trench 1.

It appears that biotic anaerobic oxidation of CAHs to carbon dioxide may be occurring with Mn (IV) as the terminal electron acceptor. This degradation pathway reaction results in the production of the reduced form of manganese [Mn (II)]. The periodic detections of high concentrations of Mn(II) in trenches 1 and 6 may be the result of this biotic process.

Evidence for the existence of abiotic reductive dechlorination is indicated by the presence of reduced iron [Fe(II)] and trans-DCE in trench 1. Field sampling analyses (Noblis) indicated positive results for hydrogen sulfide and sulfate-reducing bacteria. Hydrogen sulfide likely reduces iron [III] in soil minerals to iron [II], which is then available to facilitate reductive dechlorination of CAHs. Although evidence suggests this degradation pathway exists, it may not be a significant contributor to the overall degradation of contaminants.

### ***Summary of Bioreactor Operation***

Analytical results from biannual sampling at the bioreactor sumps indicate that SWMU B-3 trenches contain a range of *cis*-DCE levels (0.19 – 95 µg/L) as well as concentrations of other dechlorination products (e.g., VC, ethene). A summary of the analytical data collected for the reporting period (year 7) is included in Table 1. A summary of biannual monitoring results from the bioreactor trench sumps are attached, analytical results of the surrounding SWMU B-3 multi-port monitoring wells (MPMW or Westbay<sup>®</sup>) and monitoring wells are also attached.

Results of volatile organic carbon (VOC) analyses indicate that groundwater from the uppermost saturated zone (LGR-03B) of Westbay<sup>®</sup> well CS-WB07 contains less than 100 micrograms per liter (µg/L) of PCE, TCE, and *cis*-DCE; well CS-WB06 contains less than 100 µg/L of PCE and greater than 100 µg/L of TCE and *cis*-DCE. Similar analysis of groundwater from extraction wells indicate wells CS-MW16-CC and B3-EXW05 contain less than 100 micrograms per liter (µg/L) of PCE, TCE, and *cis*-DCE; wells CS-MW16-LGR, B3-EXW01, B3-EXW03, and B3-EXW04 contains greater than 100 µg/L of PCE, TCE, and *cis*-DCE, and B3-EXW02 contains less than 100 µg/L of PCE, and greater than 100 µg/L of TCE and *cis*-DCE.

VOC analytical results from bioreactor trench sump samples indicate an increase in contaminant mass (total molar concentration) in trench 1 sumps (T1-1, T1-2, and T1-3) and a decrease in trench 6 sumps (T6-1 and T6-2) since April 2013. Over the bioreactor operational period (7 years), contaminant mass appears stable or decreasing.

Water quality field measurements from bioreactor trench 1 sumps indicate during the seventh year of bioreactor operations average annual values for DO, pH, ORP, and specific conductivity were 0.14 mg/L, 6.56, -88.65 mV, and 0.77 mS/cm, respectively, and temperatures ranged from ~21 °C to ~27 °C. Other observations regarding the data collected during this reporting period are listed below.

Water quality field measurements from trench 6 during sixth year of operations include average DO, pH, ORP, and specific conductivity of 0.93 mg/L, 6.67, -46.49 mV, and 0.61 mS/cm respectively; and temperatures ranged between 20 °C to 24 °C.

Ground water elevation data from the shallow UGR wells combined with similar data from the Westbay UGR zones and the bioreactor sumps helped confirm the presence of a groundwater “mound” around the bioreactor trenches. Analyses of samples from these wells indicated the presence of vinyl chloride with concentrations ranging from non-detect to 85 ppb, with the highest levels found north and west of the bioreactor. MW-28, located southwest of the bioreactor, has been consistently dry, and water levels in MW-29 and -30 were too low (less than 0.5’) to collect field parameter measurements, and therefore not sampled. Water quality parameters in the UGR wells fluctuated during the reporting period. In general, good reducing conditions (low DO, negative ORP, and near neutral pH) were reported in MW-31 and -34, and moderate reducing conditions in MW-26 and -27, while poor reducing conditions were observed in MW-32, and 33.

During the reporting period, 28.28 inches of precipitation were measured on-post. Over the year, average water thicknesses in active trenches 1 and 6 (6.12 feet and 4.09 feet, respectively) indicate saturated conditions within the bioreactor is being maintained.

Attached are graphs including: VOC concentration summaries for extraction wells, storage tanks (UIC), trench 1 and 6 sumps, and in the defined uppermost saturated zones (zone LGR-03B) within surrounding multi-port monitoring wells, and water level elevations in the defined uppermost saturated zone (zone LGR-03B) of multi-port monitoring wells including precipitation data.

### ***Quarter 28 - Analytical Data Observations***

1. Arsenic (As) was not detected above the MCL (10 µg/L) in any of the Westbay well zones, trench sumps or shallow UGR wells around the bioreactor during the reporting period. Manganese (Mn) was reported in bioreactor trench water samples at concentrations ranging from 18 to 402 µg/L (MCL is 50 µg/L). All six of the UGR wells sampled during the year had elevated levels of Mn with concentrations ranging from 68 to 1,890 µg/L. Three of the shallow UGR wells did not produce enough water to sample. An elevated level of Mn was reported in CS-B3-MW01 (146 µg/L) and elevated levels of Mn were reported in CS-WB06-UGR-01 (1,880 µg/L), WB07-LGR-01 (522 µg/L), and CS-WB08-UGR-01 (586 µg/L), all other multi-port monitoring well (MPMW) zones reported Mn below the MCL. The elevated levels are likely due to changing pH conditions of the groundwater and the reduction of naturally occurring As and Mn within the limestone media to more soluble forms. Additionally, the biotic anaerobic oxidation pathway of CAHs may also be contributing to the elevated levels of Mn within the treatment system.
2. DO and ORP values were favorable for the reduction of CAHs, and it is likely that these geochemical conditions will continue as normal bioreactor operations continue.
3. The volatile organic compound summary for the trenches indicates an end-product (DCE isomer, VC, and ethene) dominated chemical composition in water. Total molar concentrations in sumps in trenches 1 and 6 have fluctuated through the year.
4. Reductive dechlorination of CAHs by microbial activity appears to be occurring as DHC bacteria counts have been within the range of biostimulated populations (1.0E +03 cell/mL) in trench 1.
5. Saturated conditions within the bioreactor were maintained through the year with average water thicknesses of approximately 6.12 and 4.09 feet in trenches 1 and 6, respectively.

The reductive dechlorination end products VC, ethene, and ethane are present in the shallow UGR zone around the SWMU B-3 in addition to samples collected from sumps indicating the lateral influence of the bioreactor. VC is present in samples from shallow UGR wells MW26, -27,

-31, -33 and -34, (36, 33, 0.87, 0.28 and 63 µg/L), and in samples from the WB06-UGR01 (9.8 µg/L) and WB08-UGR01 (85 µg/L) zones. Ethene and ethane was present in samples from MW26, -27, -34, and WB06-UGR01 (9, 2.7, 17, and 1.3 µg/L ethene, and 4.9, 2.1, 4.7, and 2.5 µg/L ethane, respectively), and ethene was present in WB08-UGR01 (11 µg/L).

In addition to reductive dechlorination end products within the UGR, these products are also observed at depth. VC is observed in the LGR-01, -04A, -04B, and BS-01 zones within WB05 (0.42, 93, 140, and 7.7 µg/L); in the LGR-02 and -04 zones within WB06 (0.40 and 0.26 µg/L); in the LGR-01 and -02 zones within WB07 (8.4 and 1.3 µg/L); within the LGR-01 and -LGR-02 zones within WB08 (0.81 and 0.45µg/L); and in B3-MW01, (13 µg/L). Ethene is observed at depth within WB05-LGR-04A and -04B, and WB07-LGR-01 (4.3, 36, 8.3 µg/L, respectively). Additionally, ethane was observed in samples collected from WB07-LGR-01 (1.9 µg/L) during this reporting period.

### ***Recommendations***

Recommendation for further treatability study actions include:

- Continue monitoring bioreactor and surrounding wells for UIC Permit and Performance parameters.

### ***Anticipated Schedule for Next Period (May, 2014 – April, 2015):***

- Continue monitoring and maintenance activities for delivery of groundwater to the bioreactor trenches.
- Conduct semi-annual monitoring events for the bioreactor system.
- Continue UIC monitoring with annual reporting due July 2015.
- Complete incorporation of SCADA controls and automation.

## **Specific Data Observation Notes for Attachments**

- Analytical results from the B-3 trench sump (trenches 1 through 6) samples, shown in Table 28.1.2, present data from the seventh year of bioreactor operations as well as quarter 28 sampling events.
- Table 28.1.1 presents field collected data from bioreactor trench sumps, and indicates saturated conditions were maintained during the year.
- Table 28.1.2 presents the VOC concentrations from biannual samples collected in bioreactor trench sumps. These data indicate that dechlorination products are being generated within the bioreactor. VC was present in trench sumps at concentrations, ranging from non-detect, ND, to 25 µg/L during the reporting period. Ethene was observed in concentrations ranging from ND to 14 µg/L in trench 1, and non-detect to 11 µg/L in trench 6.
- Table 28.1.3 indicates that Mn(II) and Fe(II) were present at concentrations consistent with alternative degradation pathways. Additionally, Table 28.1.3 provides evidence of the biotic anaerobic degradation pathway with elevated concentrations of Mn and CO<sub>2</sub> and presents ethane concentrations ranging from ND to 9.1 µg/L in trench 1, and ND to 4.6 µg/L in trench 6 at various times during the year. Ethene and ethane was detected in each of the active trench sumps at least once during the last year, with sump T6-1 as the exception.

- Table 28.3.3 indicates that VC was present (13 µg/L) in the samples collected from monitoring well CS-B3-MW01. Table 24.2.3a indicates VC concentrations of 93 µg/L in WB05-LGR04A and 53 µg/L in WB05-LGR04B, suggesting a connection between this zone and CS-B3-MW01. Ethene was observed in WB05 zones LGR04A and LGR04B during the year (4.3 and 36 µg/L, respectively).
- Table 28.4.4 indicates that the *Dehalococcoides* (DHC) bacteria populations in the trench sumps are consistent with bioaugmented populations (1.00E+03 to 1.00E+04 cells/mL).
- Graphs depicting mole fractions and total molar concentrations in trench sumps generally indicate an increase in the fraction of degradation products and only slight changes in total molar concentrations although groundwater from extraction wells injected into the bioreactor generally contains a higher proportion of PCE and TCE (less dechlorinated) contaminant mass. The reduction in PCE and TCE fractions as shown in extracted groundwater prior to injection (Table 28.5.2) and within trench sumps (Table 28.1.2) indicate dechlorination of VOC impacted water is occurring within the trenches.
- Table 28.6.2 indicates that significant amounts of contaminant mass are being provided for injection into the bioreactor by the seven extraction wells. Parent products (PCE and TCE) make up the majority of the contaminant mass, though *cis*-DCE is also present.
- Figure 28.2.5 shows the drought-impacted water levels measured in Westbay wells (zone LGR-03B). Though water levels are significantly influenced by precipitation, current drought conditions minimize these impacts. Pumping at CS-MW16-LGR shows strong influence in the deeper LGR zones. Pumping at CS-MW16-CC appears to have little influence on UGR or upper LGR zones.
- Table 28.7.3 indicates the presence of VC in several of the shallow UGR wells with concentrations ranging from non-detect to 36 µg/L. Additionally, Table 24.7.3 provides evidence of the biotic anaerobic degradation pathway as indicated by elevated concentrations of Mn and CO<sub>2</sub>.

## Analytical Summary Data

**Table 1 Summary of Analysis Presented for Reporting Period**

<b>Event</b>	<b>VOCs</b>	<b>TDS</b>	<b>TOC</b>	<b>DOC</b>	<b>MEE &amp; CO<sub>2</sub></b>	<b>SO<sub>3</sub><sup>-</sup></b>	<b>Chloride, Sulfate</b>	<b>Fe<sup>2+</sup></b>	<b>Mn</b>	<b>Metals*</b>	<b>H<sup>+</sup></b>	<b>DHC</b>
Semi-Annual Sampling <sup>a</sup> (Quarter 26)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Semi-Annual Sampling <sup>a</sup> (Quarter 28)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

a – Semi-annual sampling includes samples from B3-trench sumps, Monitoring Wells, Extraction Wells, and Multi-port (Westbay) wells.

\* - Metals analyses was reduced to include only arsenic results beginning with the Month 44 sampling event.

## Figures

Figure 28.1.2 T1-1

**B-3 Bioreactor Trench 1 Sump 1 VOC Summary**  
**Apr 2013 - Apr 2014**

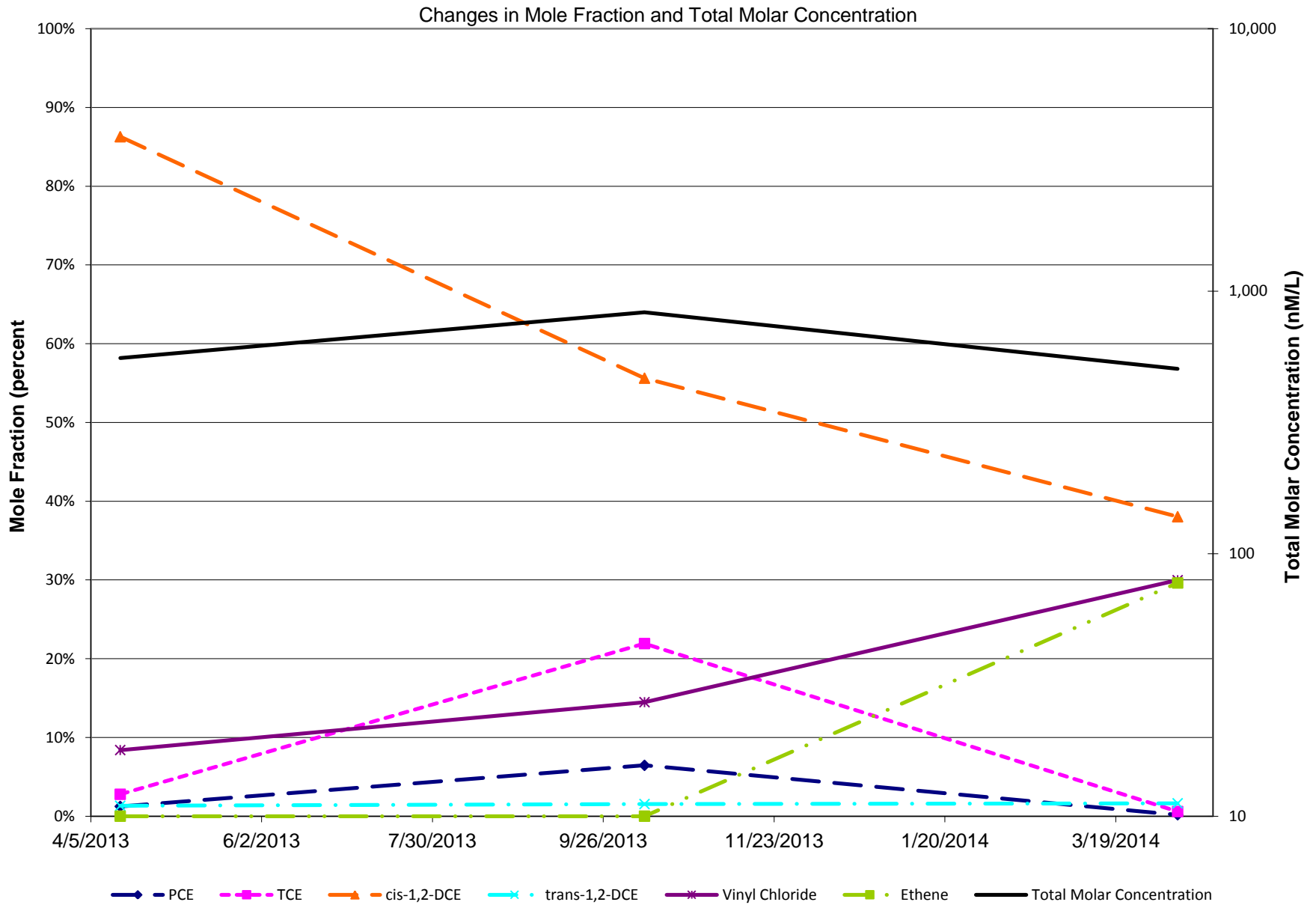




Figure 28.1.2 T1-2

**B-3 Bioreactor Trench 1 Sump 2 VOC Summary**  
**Apr 2013 - Apr 2014**

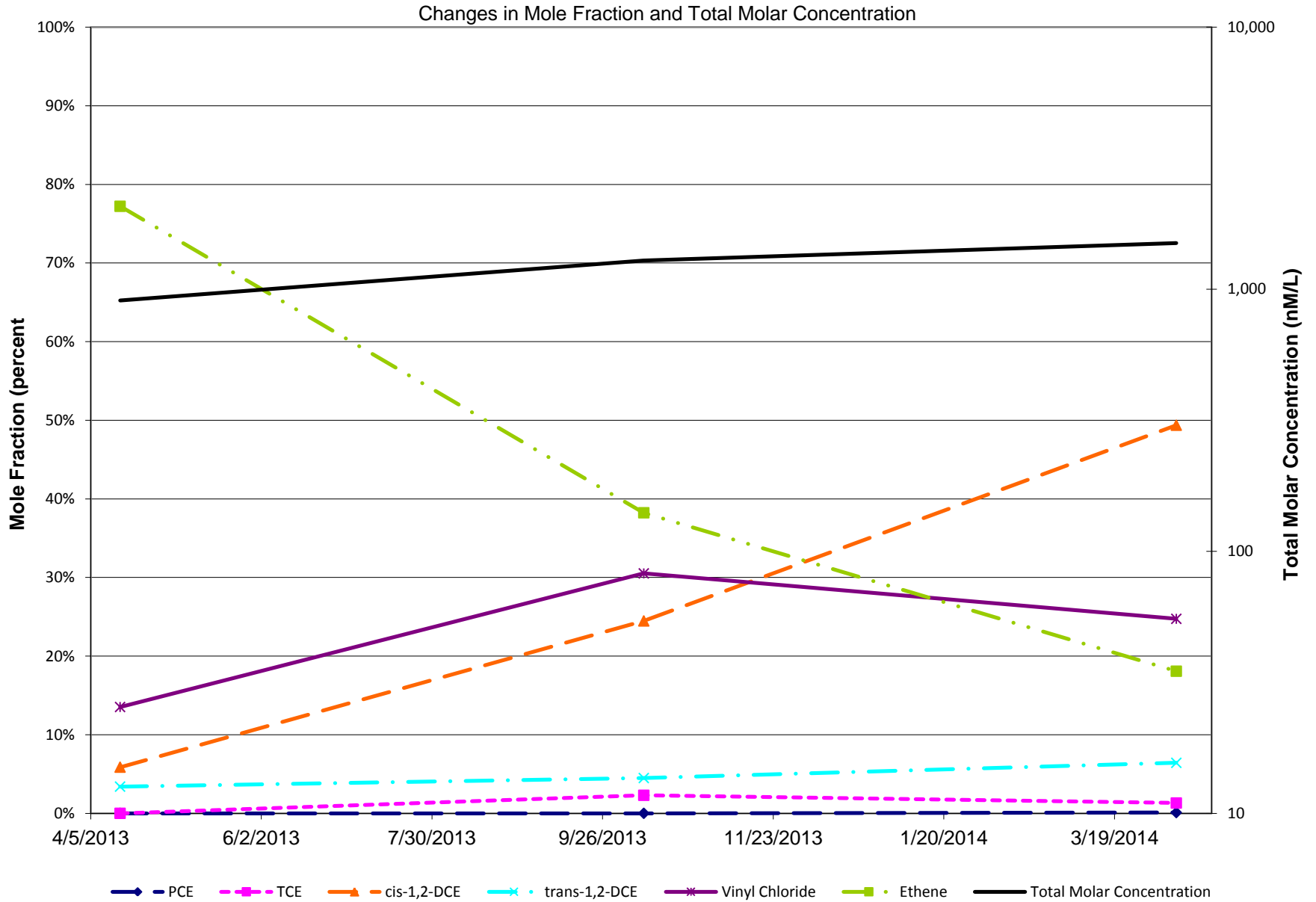


Figure 28.1.2 T1-3

**B-3 Bioreactor Trench 1 Sump 3 VOC Summary**  
**Apr 2013 - Apr 2014**

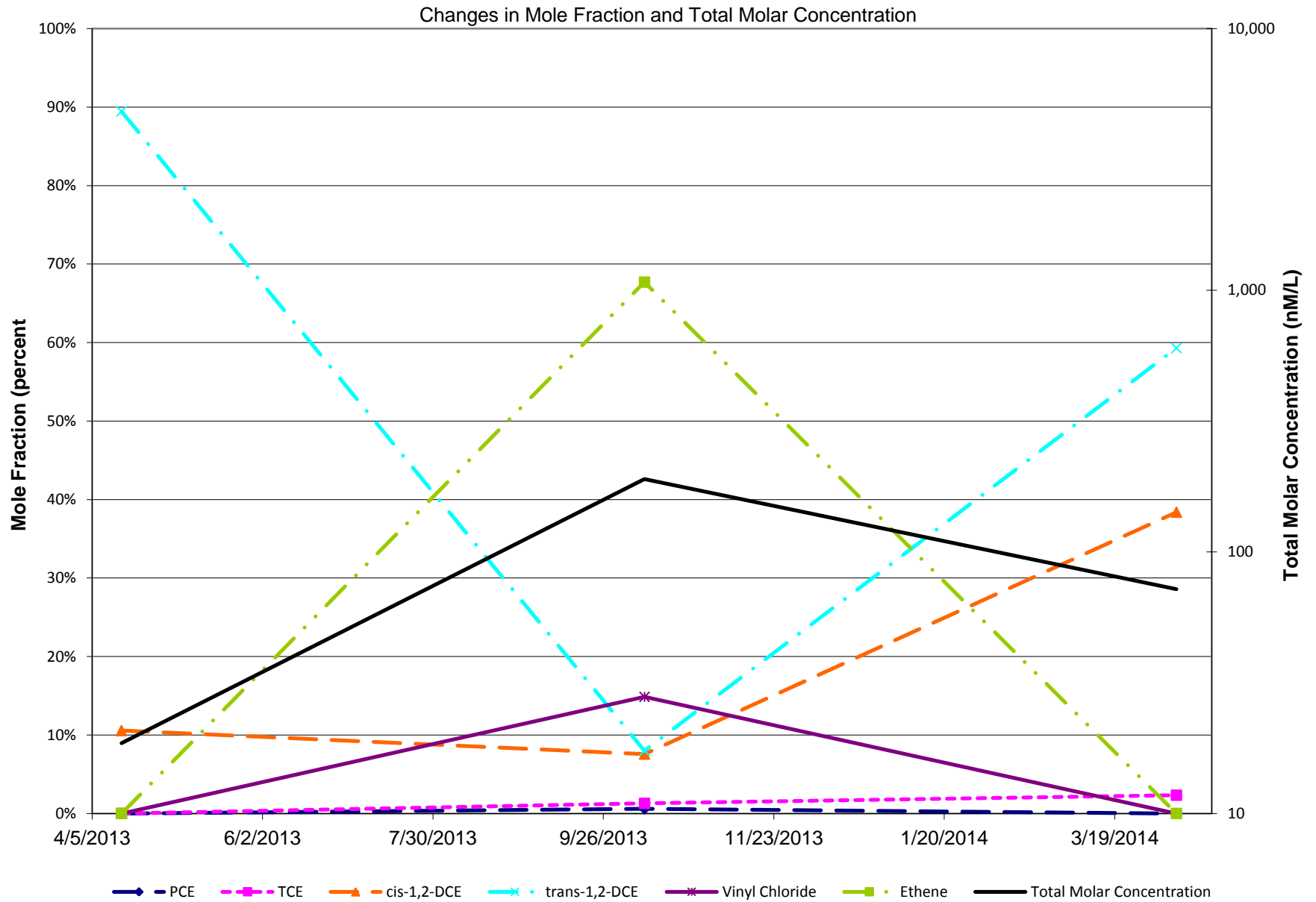


Figure 28.1.2 T6-1

### B-3 Bioreactor Trench 6 Sump 1 VOC Summary Apr 2013 - Apr 2014

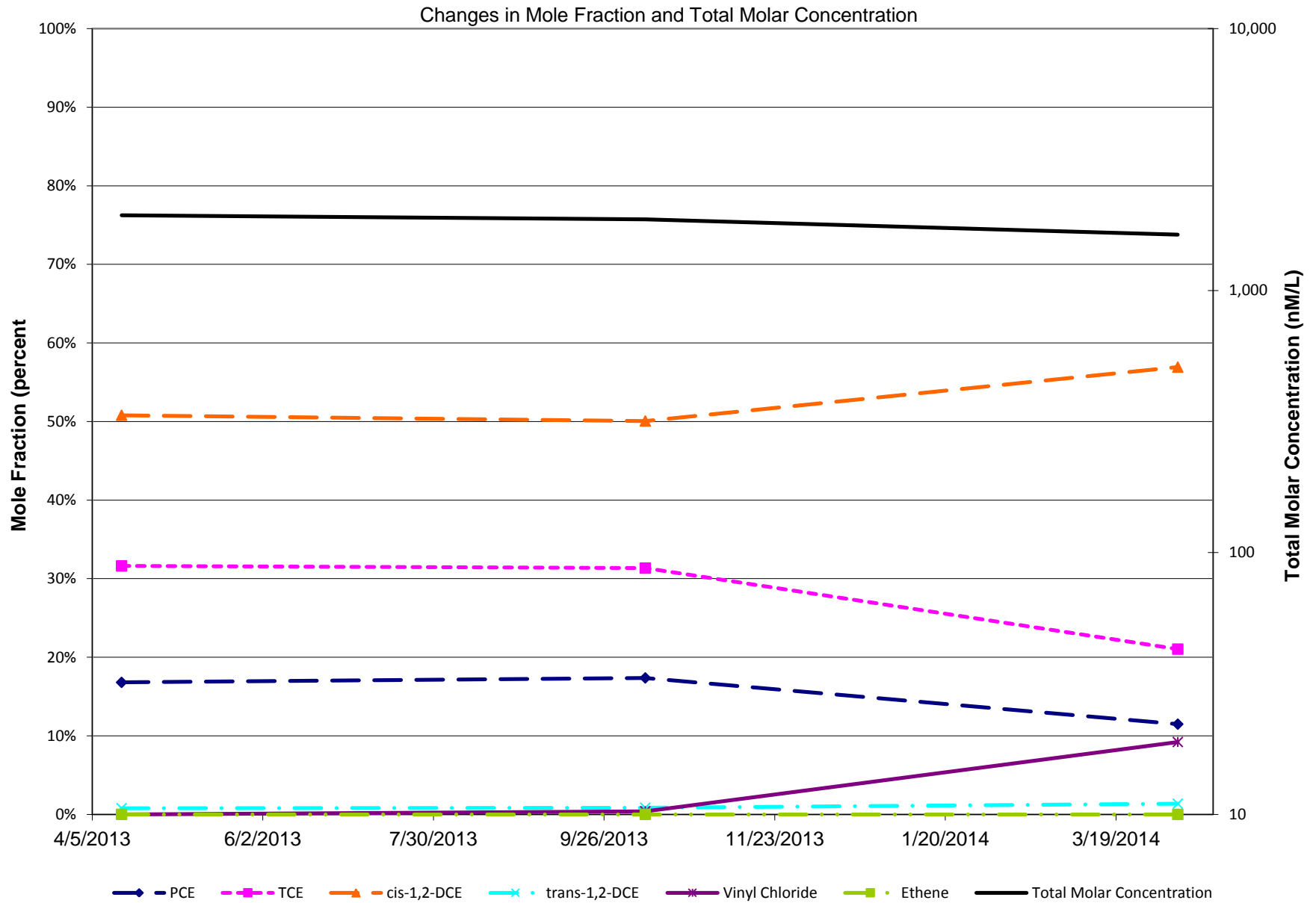


Figure 28.1.2 T6-2

**B-3 Bioreactor Trench 6 Sump 2 VOC Summary**  
**Apr 2013 - Apr 2014**

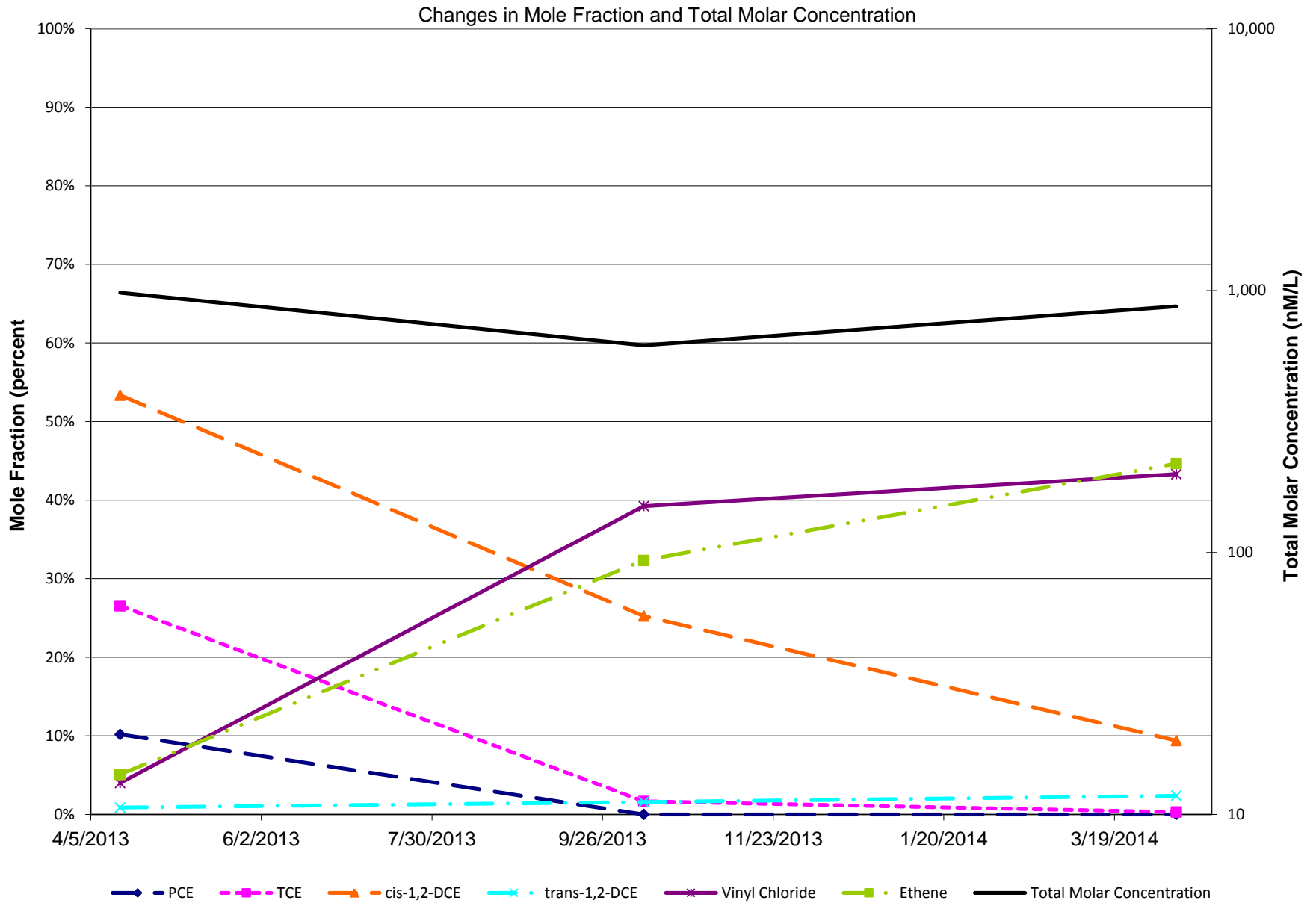


Figure 28.2.2b

CS-WB06-LGR03B VOC Summary  
Apr 2013 - Apr 2014

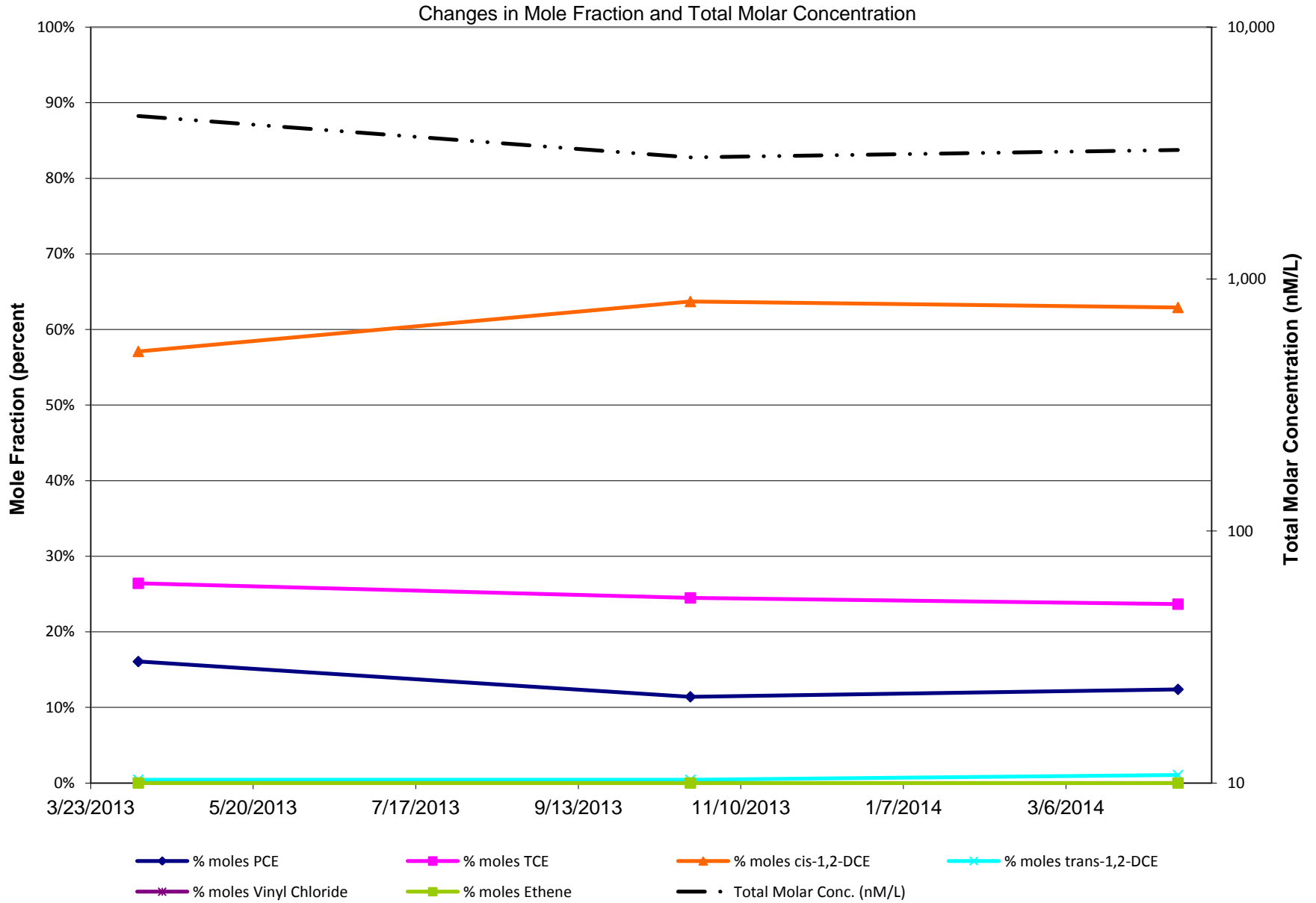


Figure 28.2.2c

CS-WB07-LGR03B VOC Summary  
Apr 2013 - Apr 2014

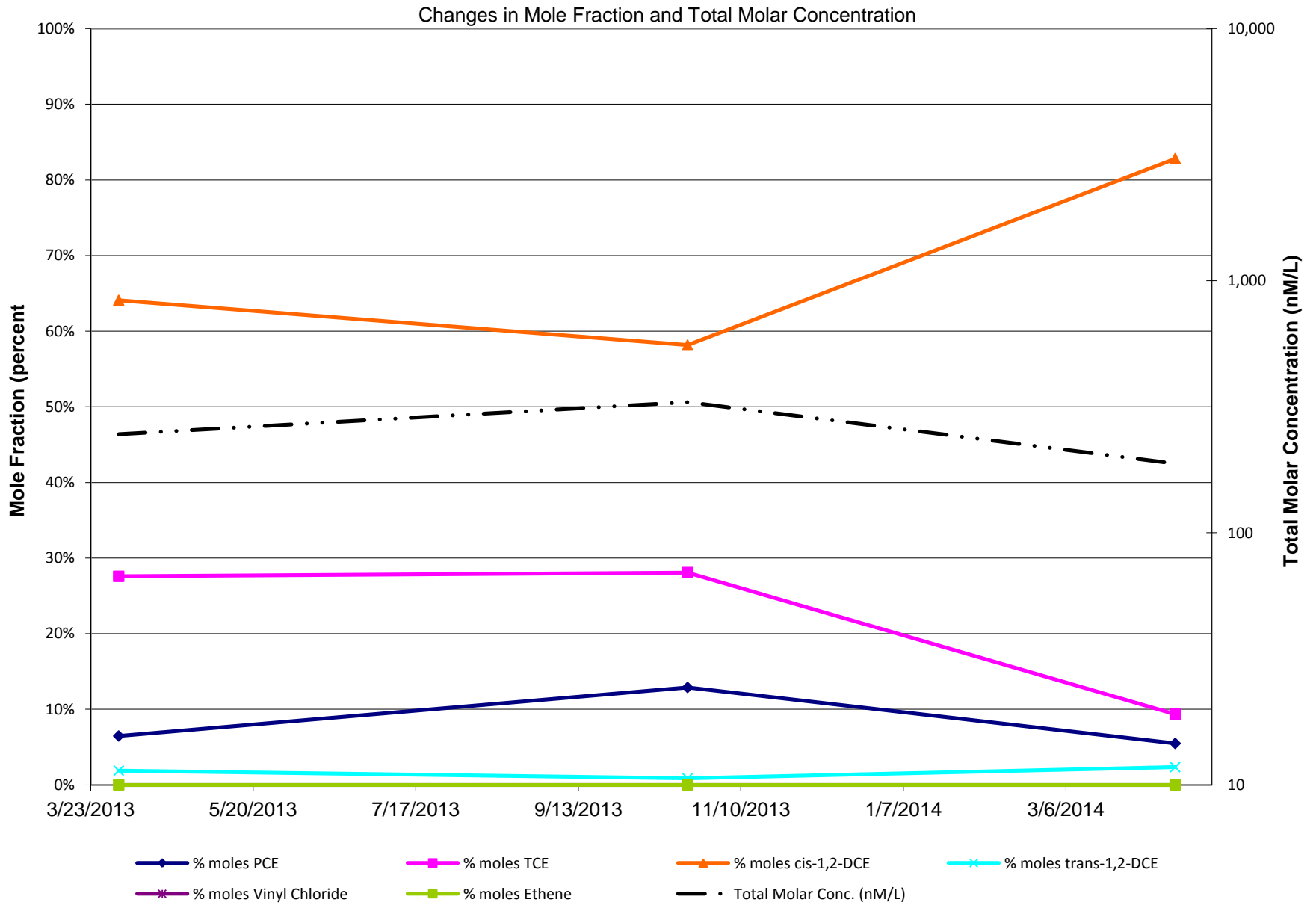


Figure 28.2.5

### Lower Glen Rose Groundwater Elevations (feet above MSL) Measured in Westbay Wells April 2012 - April 2014

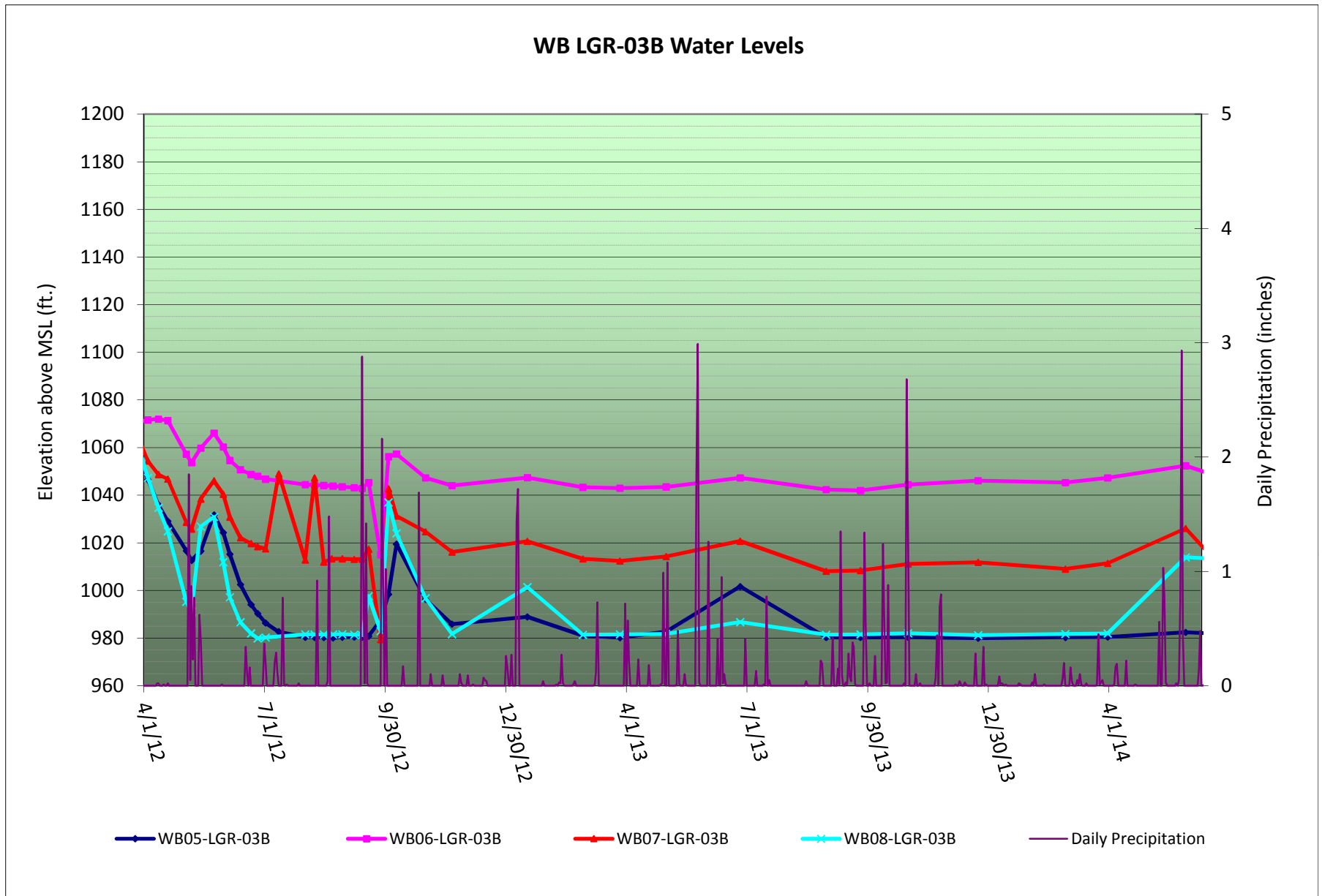


Figure 28.5.2

### Changes in Mole Fraction and Total Molar Concentration at Storage Tank (UIC) Apr 2013 - Apr 2014

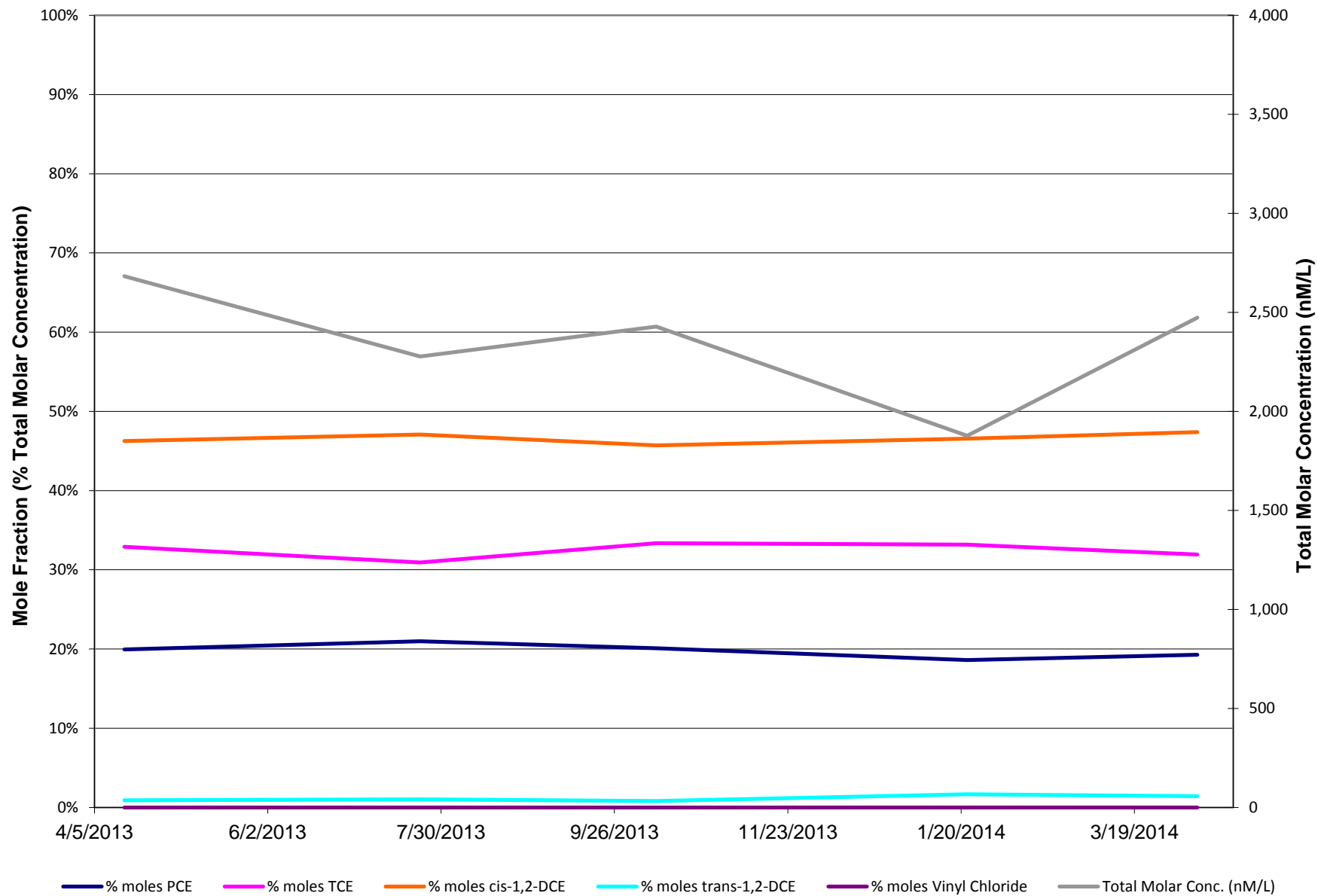




Figure 28.6.2 16-CC

CS-MW16-CC VOC Summary  
Apr 2013 - Apr 2014

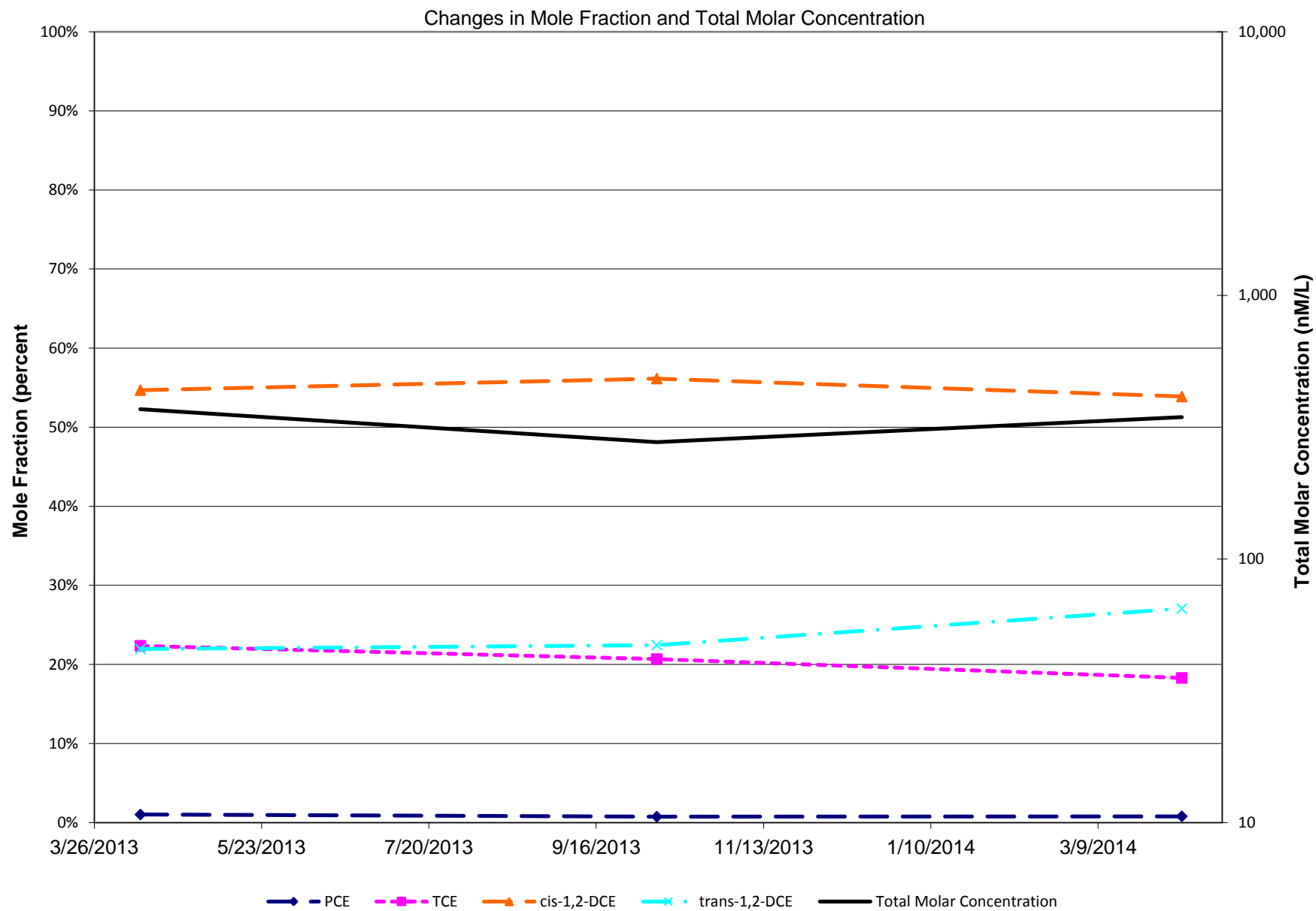


Figure 28.6.2 16-LGR

CS-MW16-LGR VOC Summary  
Apr 2013 - Apr 2014

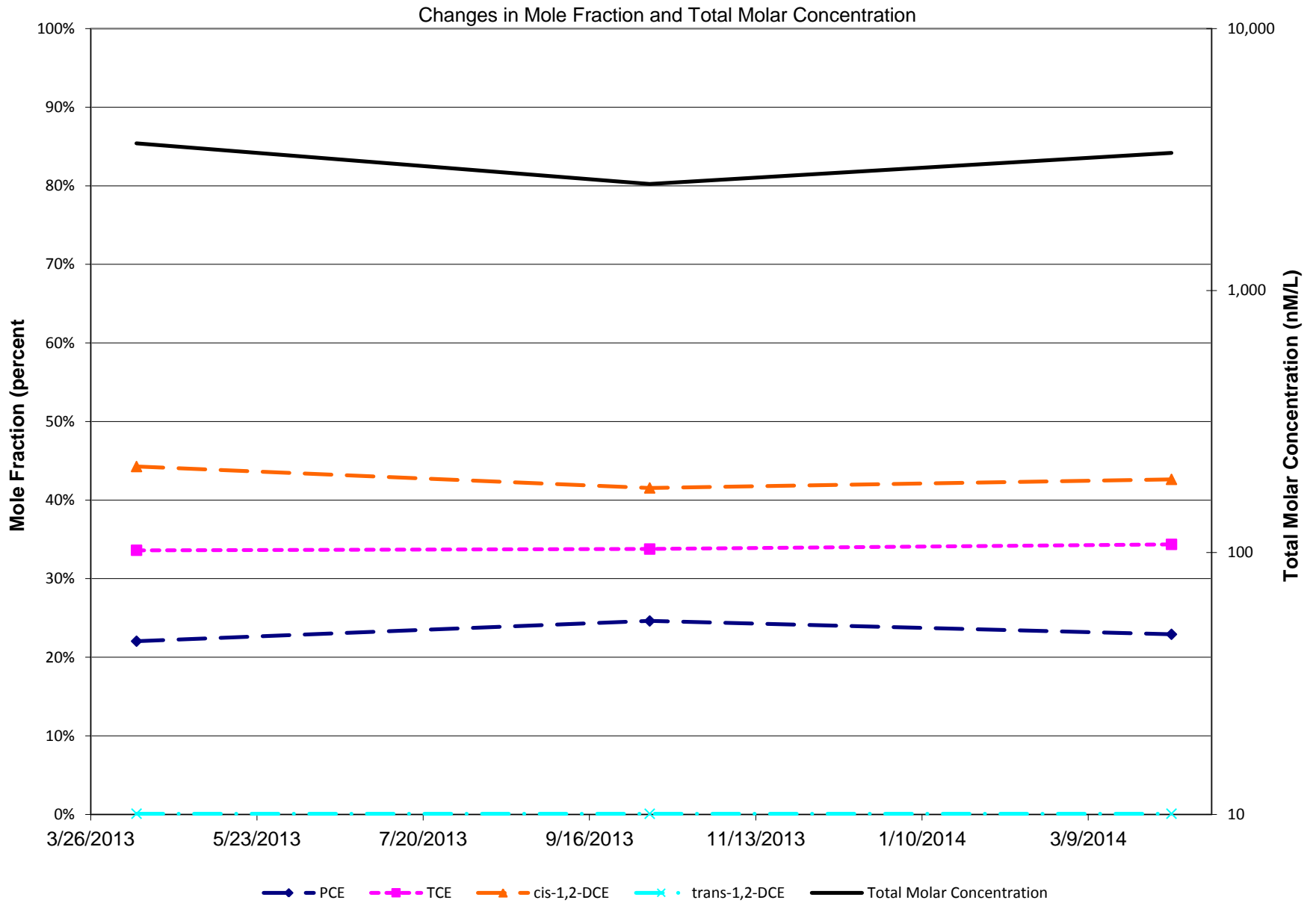


Figure 28.6.2 EXW02

**B3-EXW02 VOC Summary**  
**Apr 2013 - Apr 2014**

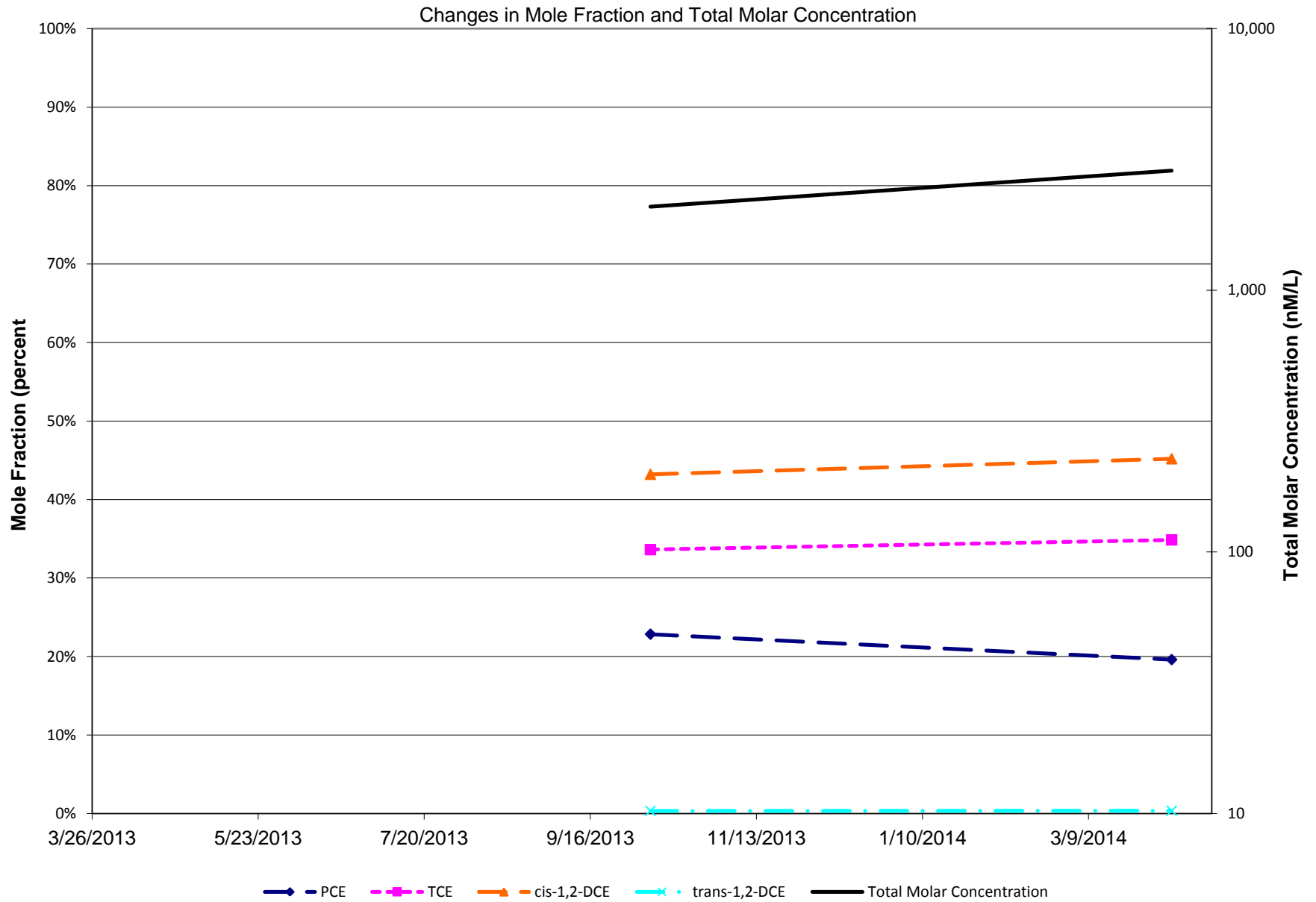


Figure 28.6.2 EXW03

**B3-EXW03 VOC Summary**  
**Apr 2013 - Apr 2014**

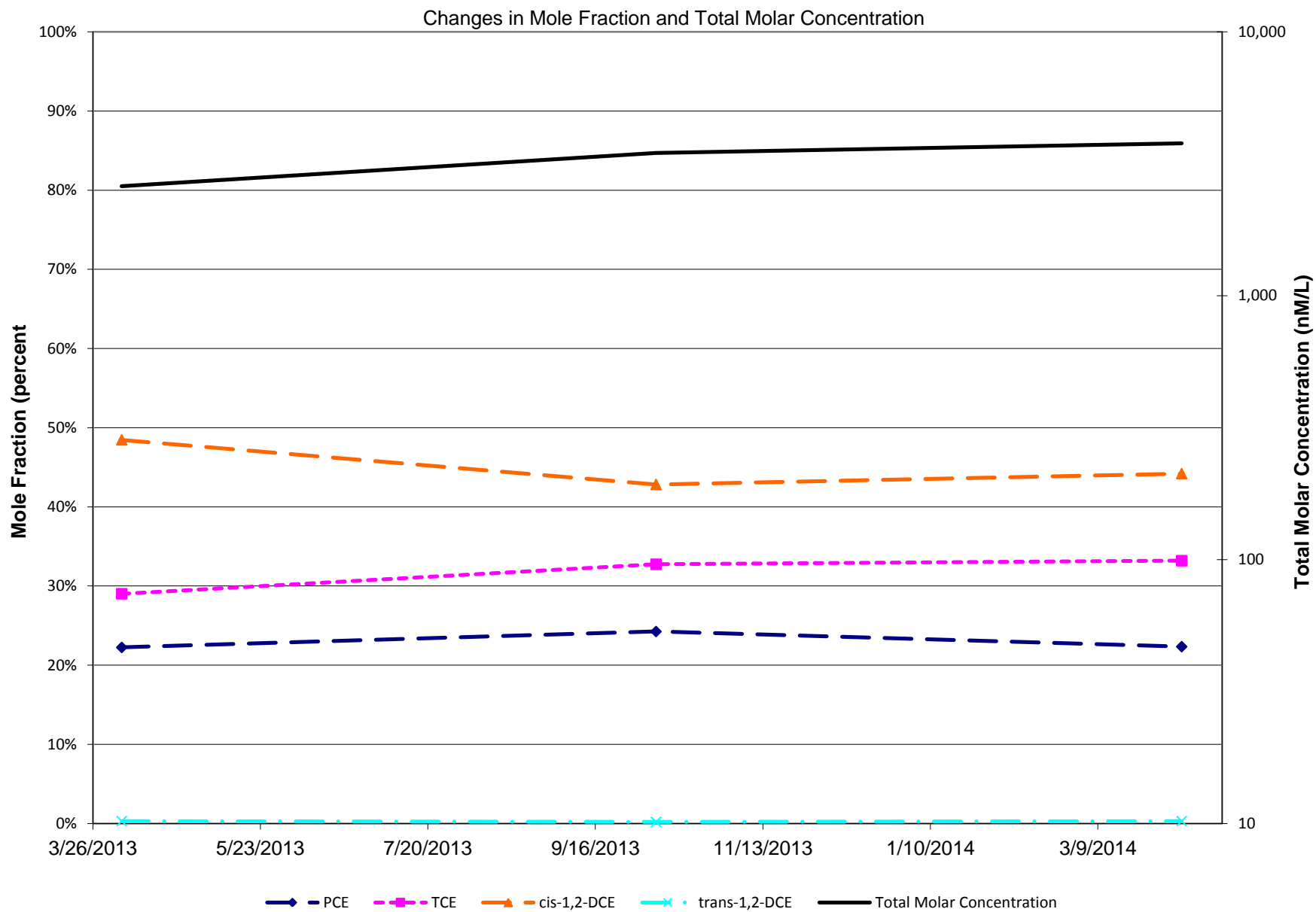


Figure 28.6.2 EXW04

**B3-EXW04 VOC Summary**  
**Apr 2013 - Apr 2014**

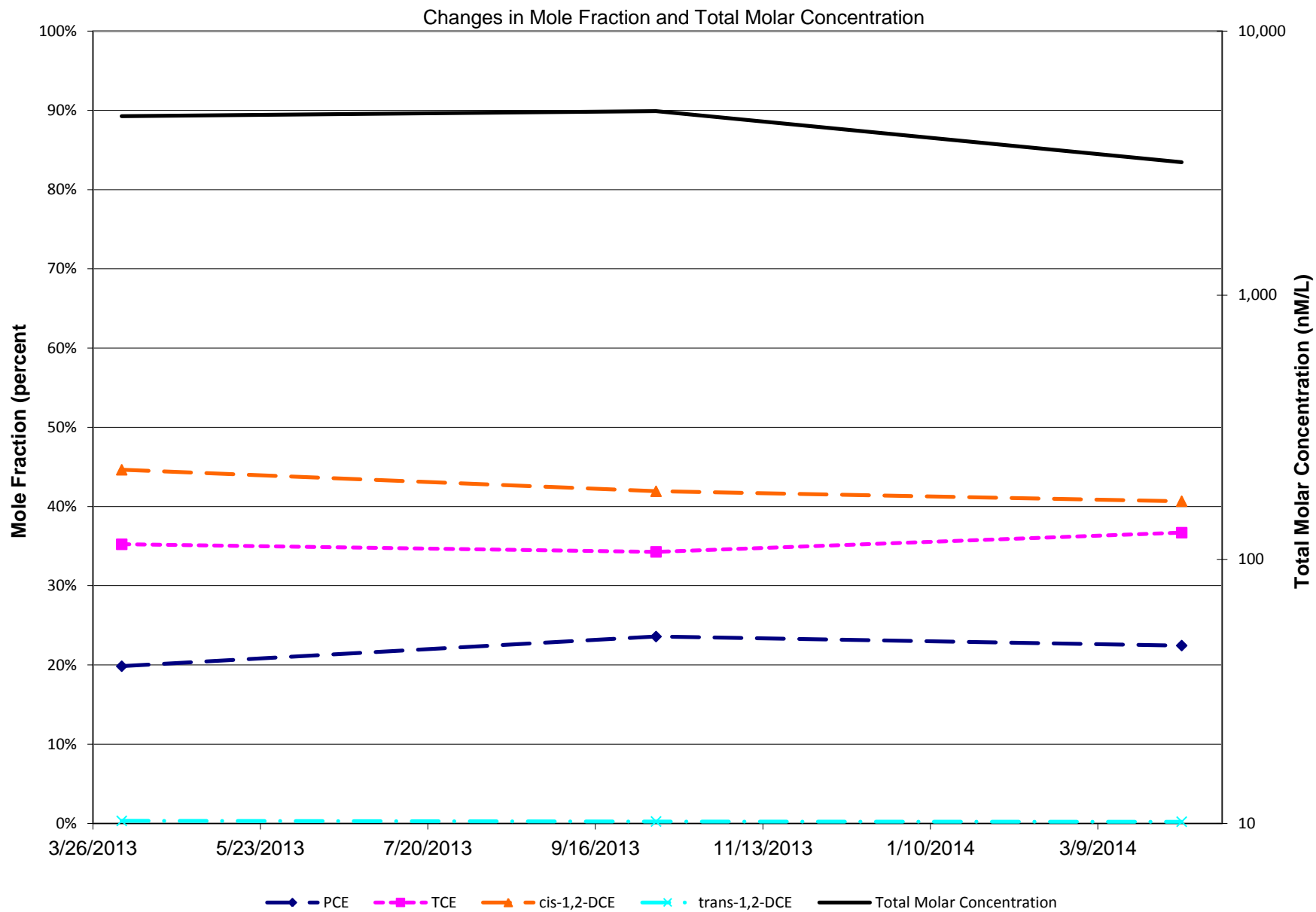
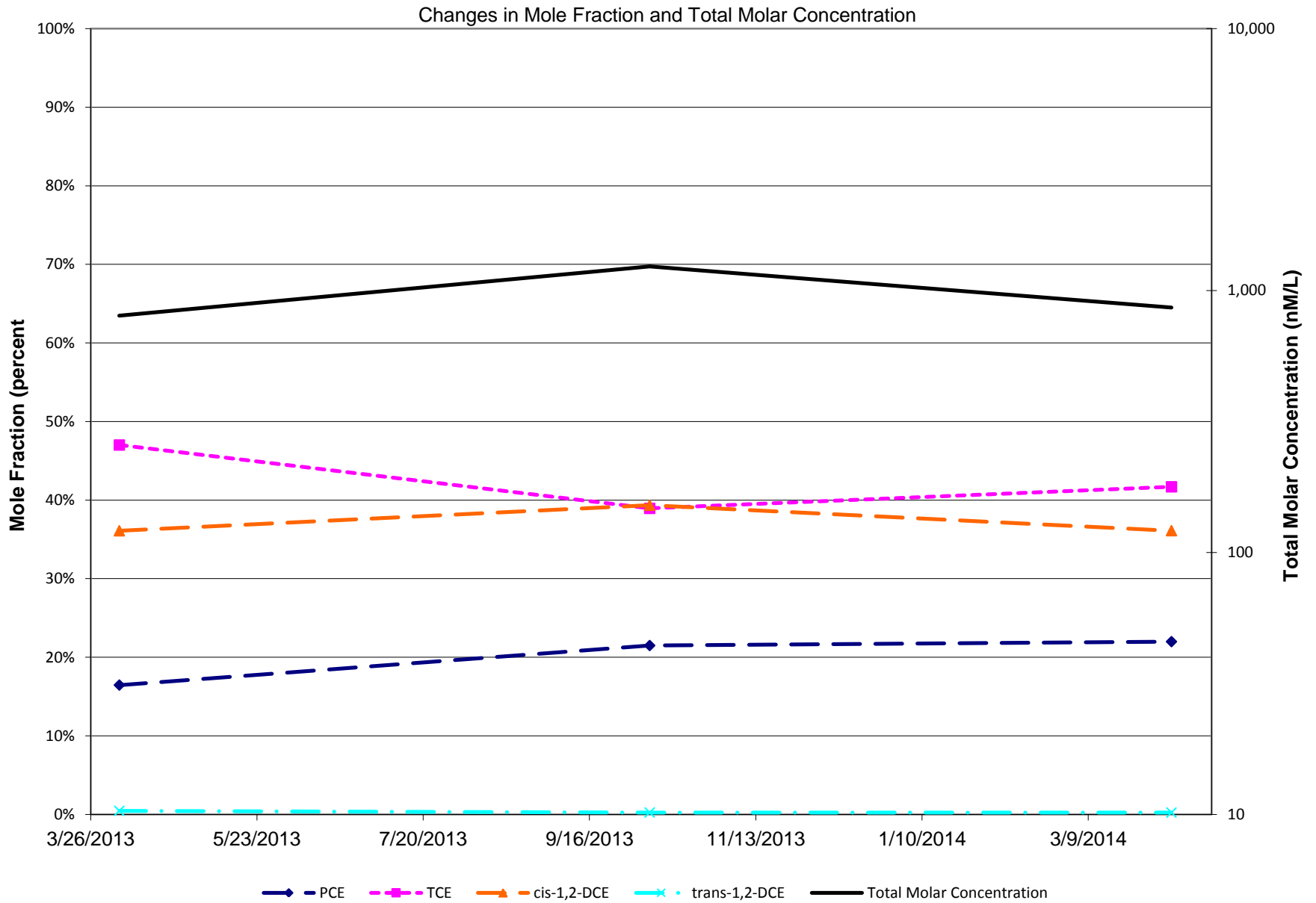


Figure 28.6.2 EXW05

**B3-EXW05 VOC Summary**  
**Apr 2013 - Apr 2014**



## Tables

Table 28.1.1

SWMU B3 Bioreactor Trenches - Field Measurement Data  
April 2013 - April 2014

<b>TRENCH 1</b>								
<b>Sump 1-1</b>								
Sump Depth: 15.95 feet BTOC								
Sample Date	Sample Time	Sump H <sub>2</sub> O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H <sub>2</sub> O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/15/2013	920	6.02	6.82	21.88	1.016	0.33	8.1	6.38
5/1/2013	1010	7.55	6.7	22.56	0.723	0.19	-183.1	4.85
6/28/2013	1245	5.33	6.67	23.59	0.612	0.12	-138.9	5.33
7/18/2013	1000	7.21	6.68	23.62	0.725	0.17	-90.0	5.69
8/16/2013	1427	7.64	6.42	24.34	0.696	0.19	-147.4	5.26
9/26/2013	1140	5.64	6.68	23.16	0.741	0.16	98.5	7.26
10/10/2013	940	5.50	6.34	22.75	0.752	0.11	94.5	7.40
12/19/2013	1300	4.67	6.7	21.21	0.712	0.43	64.9	8.23
1/30/2014	1300	11.10	6.59	20.32	0.904	0.30	-121.5	4.85
3/27/2014	1430	9.53	6.4	21.44	0.88	0.40	-92.7	6.42
4/9/2014	925	10.14	6.51	22.26	0.741	0.27	-85.9	5.81



Table 28.1.1

SWMU B3 Bioreactor Trenches - Field Measurement Data  
April 2013 - April 2014

<b>TRENCH 1</b>								
<b>Sump 1-2</b>								
Sump Depth: 15.52 feet BTOC								
Sample Date	Sample Time	Sump H <sub>2</sub> O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H <sub>2</sub> O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/15/2013	920	5.94	6.79	21.9	1.002	0.07	-173.3	6.46
5/1/2013	1010	7.38	6.67	22.32	0.746	0.06	-222.9	5.02
6/28/2013	1010	5.87	6.68	24.07	0.542	0.03	-197.1	6.53
7/18/2013	1000	7.22	6.59	24.32	0.659	0.01	-166.3	5.18
8/16/2013	1427	7.52	6.54	25.52	0.686	0.1	-186.9	4.88
9/26/2013	1140	5.68	6.70	23.32	0.642	0.01	-171.5	6.72
10/10/2013	940	5.35	6.64	22.85	0.651	0.07	138.5	7.05
12/19/2013	1300	4.70	6.27	21.51	1.16	0.1	-55.7	7.70
1/30/2014	1300	10.69	6.45	20.52	0.709	0.2	-25.4	4.83
3/27/2014	1430	9.24	6.62	21.42	0.704	0.05	-108.4	6.28
4/9/2014	925	9.70	6.68	21.65	0.594	0.23	-74.8	6.25

Table 28.1.1

SWMU B3 Bioreactor Trenches - Field Measurement Data  
April 2013 - April 2014

<b>TRENCH 1</b>								
<b>Sump 1-3</b>								
Sump Depth: 14.97 feet BTOC								
Sample Date	Sample Time	Sump H <sub>2</sub> O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H <sub>2</sub> O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/15/2013	920	6.26	6.65	21.72	1.200	0.07	-80.50	6.59
5/1/2013	1010	7.42	6.53	22.45	0.798	0.13	-140.6	7.55
6/28/2013	1245	5.73	6.67	25.29	0.756	0.06	-112.3	7.12
7/18/2013	1000	7.72	6.36	25.59	0.819	0.13	-57.9	5.13
8/16/2013	1427	7.67	6.41	26.1	0.712	0.08	-142.3	5.18
6/26/2013	1140	6.2	6.48	24.75	0.873	0.05	-154.7	6.65
10/10/2013	940	5.45	6.6	24.08	0.906	0.03	-164.6	7.40
12/19/2013	1300	4.88	6.47	19.93	1.076	0.05	74.2	7.97
1/30/2014	1300	9.89	6.63	23.55	1.032	0.05	-110	2.96
3/27/2014	1430	8.6	6.62	23.04	0.893	0.06	-86.6	4.25
4/9/2014	905	7.12	6.63	23.37	0.706	0.25	-92.6	7.85

Table 28.1.1

SWMU B3 Bioreactor Trenches - Field Measurement Data  
April 2013 - April 2014

<b>TRENCH 2</b>									
<b>Sump 2-1</b>									
Sump Depth: 11.78 feet BTOC									
Sample Date	Sample Time	Sump H <sub>2</sub> O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H <sub>2</sub> O Thickness	
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>	
4/15/2013	920	7.49	6.73	21.74	1.324	0.21	-123.7	2.18	
5/1/2013	1010	8.92	6.64	22.21	0.834	0.13	-108.1	0.75	
6/28/2013	1245	6.88	6.75	25.89	0.905	0.33	-78	2.79	
7/18/2013	1000	8.8	6.58	26.31	0.786	0.17	-73.6	0.87	
8/16/2013	1427	8.81	6.57	28.67	0.819	0.2	-90.6	0.86	
9/26/2013	1140	7.43	6.63	28.25	1.030	0.42	103.9	2.24	
10/10/2013	940	6.95	6.63	26.94	1.209	0.4	131.2	2.72	
12/19/2013	1300	6.15	6.59	24.41	1.334	0.12	-44.9	3.52	
1/30/2014	1300	11.06	6.6	22.63	1.448	0.27	-43.1	0.72	
3/27/2014	1430	9.89	6.54	21.73	1.232	0.18	-84.4	1.89	
4/9/2014	925		No data collected						

Table 28.1.1

SWMU B3 Bioreactor Trenches - Field Measurement Data  
April 2013 - April 2014

<b>TRENCH 2</b>									
<b>Sump 2-2</b>									
Sump Depth: 11.12 feet BTOC									
Sample Date	Sample Time	Sump H <sub>2</sub> O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H <sub>2</sub> O Thickness	
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>	
4/15/2013	920	7.89	6.87	21.76	1.518	0.08	-128	2.12	
5/1/2013	1010	9.95	6.79	22.48	1.087	0.15	-180.2	0.06	
6/28/2013	1245	7.21	6.69	25.73	0.876	0.14	-132.9	2.80	
7/18/2013	1000	9.06	6.68	27.44	1.027	0.11	-136.3	0.95	
8/16/2013	1427	9.29	6.61	28.67	0.99	0.16	-81.4	0.72	
9/26/2013	1140	7.55	6.63	27.33	1.085	0.05	-81.9	2.46	
10/10/2013	940	7.17	6.62	25.05	0.904	0.1	14.9	2.84	
12/19/2013	1300	6.55	6.68	24.23	1.558	0.12	-59.3	3.46	
1/30/2014	1300	10.2	6.62	25.19	1.447	0.07	-106	0.92	
3/27/2014	1430	9.37	6.5	23.81	1.246	0.09	-102	1.75	
4/9/2014	925		No data collected						

Table 28.1.1

SWMU B3 Bioreactor Trenches - Field Measurement Data  
April 2013 - April 2014

<b>TRENCH 3</b>								
<b>Sump 3-1</b>								
Sump Depth: 11.05 feet BTOC								
Sample Date	Sample Time	Sump H <sub>2</sub> O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H <sub>2</sub> O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/15/2013	920	8.85	6.78	22.36	1.843	0.73	85.3	1.11
5/1/2013	1010	8.85						2.20
6/28/2013	1245	9.00						0.96
7/18/2013	1000	9.24	6.77	28.22	1.259	0.1	-108.8	0.72
8/16/2013	1427	9.49						0.47
9/26/2013	1140	9.21	6.87	30.23	1.43	0.21	-103.8	0.75
10/10/2013	940	9.18	6.84	29.34	1.377	1.1	-47.5	0.78
12/19/2013	1300	7.65	6.56	22.14	1.163	0.98	82.1	2.31
1/30/2014	1300	10.24	6.40	20.29	1.31	0.12	-3.5	0.81
3/27/2014	1430	10.09	6.44	19.78	1.462	0.11	59.9	0.96
4/9/2014	925	No data collected						

Table 28.1.1

SWMU B3 Bioreactor Trenches - Field Measurement Data  
April 2013 - April 2014

<b>TRENCH 3</b>								
<b>Sump 3-2</b>								
Sump Depth: <i>7.4 feet BTOC</i>								
Sample Date	Sample Time	Sump H <sub>2</sub> O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H <sub>2</sub> O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/15/2013	920	7.4						0.00
5/1/2013	1010	7.4						0.00
6/28/2013	1245	7.4						0.00
7/18/2013	1000	7.4						0.00
8/16/2013	1427	7.4						0.00
9/26/2013	1140	7.4						0.00
10/10/2013	940	7.4						0.00
12/19/2013	1300	7.00						0.40
1/30/2014	1300	7.40						0.00
3/27/2014	1430	7.40						0.00
4/9/2014	925	No data collected						

Table 28.1.1

SWMU B3 Bioreactor Trenches - Field Measurement Data  
April 2013 - April 2014

<b>TRENCH 4</b>								
<b>Sump 4-1</b>								
Sump Depth: 8.42 feet BTOC								
Sample Date	Sample Time	Sump H <sub>2</sub> O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H <sub>2</sub> O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/15/2013	920	6.32						0.00
5/1/2013	1010	6.32						0.00
6/28/2013	1245	6.32						0.00
7/18/2013	1000	6.32						0.00
8/16/2013	1427	6.32						0.00
9/26/2013	1140	6.32						0.00
10/10/2013	940	6.32						0.00
12/19/2013	1300	5.66	6.8	27.37	1.614	0.66	-59.9	0.66
1/30/2014	1300	8.42						0.00
3/27/2014	1430	8.42						0.00
4/9/2014	925	No data collected						

Table 28.1.1

SWMU B3 Bioreactor Trenches - Field Measurement Data  
April 2013 - April 2014

<b>TRENCH 5</b>								
<b>Sump 5-1</b>								
Sump Depth: 11.55 feet BTOC								
Sample Date	Sample Time	Sump H <sub>2</sub> O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H <sub>2</sub> O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/15/2013	920	8.09	6.84	22.17	1.044	1.17	140.2	1.24
5/1/2013	1010	8.68	6.76	22.29	0.729	0.73	15.7	0.65
6/28/2013	1245	8.54	6.54	24.2	0.572	1.48	-12.5	0.79
7/18/2013	1000	9.24						0.09
8/16/2013	1427	9.08						0.25
9/26/2013	1140	8.92						0.41
10/10/2013	940	8.43	9.33	24.13	0.86	0.89	35.8	0.90
12/19/2013	1300	7.01	6.57	20.88	0.716	0.23	-87.6	2.32
1/30/2013	1300	11.25						0.30
3/27/2014	1430	9.78	6.46	21.69	0.841	0.06	-78.8	1.77
4/9/2014	925	No data collected						



Table 28.1.1

SWMU B3 Bioreactor Trenches - Field Measurement Data  
April 2013 - April 2014

<b>TRENCH 5</b>								
<b>Sump 5-2</b>								
Sump Depth: 11.04 <i>feet BTOC</i>								
Sample Date	Sample Time	Sump H <sub>2</sub> O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H <sub>2</sub> O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/15/2013	920	7.92						0.06
5/1/2013	1010	7.97						0.01
6/28/2013	1245	7.98						0.00
7/18/2013	1000	7.9						0.08
8/16/2013	1427	7.94						0.04
9/26/2013	1140	7.98						0.00
10/10/2013	940	7.88						0.10
12/19/2013	1300	5.91	6.6	26.18	2.177	0.14	-63.6	2.07
1/30/2014	1300	10.75						0.29
3/27/2014	1430	10.78						0.26
4/19/2014	925	No data collected						

Table 28.1.1

SWMU B3 Bioreactor Trenches - Field Measurement Data  
April 2013 - April 2014

<b>TRENCH 6</b>								
<b>Sump 6-1</b>								
Sump Depth: 14.63 feet BTOC								
Sample Date	Sample Time	Sump H <sub>2</sub> O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H <sub>2</sub> O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/15/2013	920	7.74	6.97	22.30	0.856	2.52	57.80	4.48
5/1/2013	1010	8.12	6.93	22.56	0.587	1.06	2.20	3.33
6/28/2013	1245	7.45	6.91	23.15	0.442	2.95	-14.70	4.00
7/18/2013	1000	7.32	6.79	23.19	0.532	1.95	59.00	4.13
8/16/2013	1427	9.02	6.74	23.71	0.526	3.03	12.60	2.43
9/26/2013	1140	8.96	6.72	22.94	0.628	2.54	-39.70	2.49
10/10/2013	940	7.03	6.67	22.58	0.641	2.23	48.90	4.42
12/19/2013	1300	7.18	6.80	21.01	0.608	0.61	42.90	4.27
1/30/2014	1300	12.04	6.76	20.00	0.636	1.77	58.73	2.59
3/27/2014	1430	11.05	6.82	21.43	0.641	0.54	18.00	3.58
4/9/2014	925	10.68	6.75	21.68	0.549	0.38	39.60	4.88

Table 28.1.1

SWMU B3 Bioreactor Trenches - Field Measurement Data  
April 2013 - April 2014

<b>TRENCH 6</b>								
<b>Sump 6-2</b>								
Sump Depth: 15.56 feet BTOC								
Sample Date	Sample Time	Sump H <sub>2</sub> O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H <sub>2</sub> O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/15/2013	920	7.51	6.81	21.98	0.912	0.22	17.6	4.83
5/1/2013	1010	7.75	6.79	22.43	0.624	0.04	-191.3	4.59
6/28/2013	1245	7.3	6.69	23.42	0.512	0.05	-181	5.04
7/18/2013	1000	7.19	6.53	23.36	0.576	0.04	-134.7	5.15
8/16/2013	1427	8.8	6.45	23.99	0.583	0.03	-158.4	3.54
9/26/2013	1140	8.38	6.49	23.03	0.687	0.02	-166	3.96
10/10/2013	940	7.72	6.44	22.67	0.708	0.02	-135.5	4.62
12/19/2013	1300	7.05	6.61	20.93	0.688	0.68	-79.2	5.29
1/30/2014	1300	11.82	6.12	20.34	0.712	0.11	-51.9	3.74
3/27/2014	1430	10.74	6.57	22.16	0.726	0.07	-98.9	4.82
4/9/2014	925	10.68	6.75	21.68	0.549	0.38	39.6	4.88

Table 28.1.2

**B-3 Bioreactor Trench VOC Summary**  
**Apr 2013 - Apr 2014**

Q28 Date	T1-1			T1-2			T1-3			T6-1			T6-2		
	4/15/2013	10/10/2013	4/9/2014	4/15/2013	10/10/2013	4/9/2014	4/15/2013	10/10/2013	4/9/2014	4/15/2013	10/10/2013	4/9/2014	4/15/2013	10/10/2013	4/9/2014
PCE (µg/L)	1.1	8.9	0.15	0	0	0.23	0	0.19	0	54	54	31	17	0	0
TCE (µg/L)	2.0	24	0.39	0	3.9	2.6	0	0.32	0.22	80	77	45	34	1.3	0.34
cis-1,2-DCE (µg/L)	47	45	19	5.2	31	72	0.19	1.4	2.7	95	91	90	51	15	7.9
trans-1,2-DCE (µg/L)	0.71	1.2	0.80	3.0	5.6	9.3	1.6	1.5	4.1	1.5	1.5	2.1	0.82	0.94	2.0
Vinyl chloride (µg/L)	2.9	7.5	9.5	7.6	25	23	0	1.8	0	0	0.45	9.4	2.4	15	24
Ethene (µg/L)	0	0	4.2	20	14	7.6	0	3.6	0	0	0	0	1.4	5.6	11
PCE (nM/L)	6.875	53.609	0.905	0.000	0.000	1.387	0.000	1.146	0.000	325.273	324.730	187.662	99.801	0.000	0.000
TCE (nM/L)	15.450	182.130	2.968	0.000	29.530	19.636	0.000	2.435	1.674	612.299	586.118	343.710	260.522	10.199	2.588
cis-1,2-DCE (nM/L)	480.041	462.197	192.264	53.120	314.905	739.969	1.960	14.337	27.643	983.600	936.153	930.376	523.569	155.957	81.692
trans-1,2-DCE (nM/L)	7.323	12.790	8.252	30.737	57.762	96.235	16.606	15.162	42.702	15.266	15.884	22.176	8.458	9.696	20.629
Vinyl chloride (nM/L)	46.713	120.301	151.496	122.380	392.737	370.821	0.000	28.155	0.000	0.000	7.199	150.536	39.194	242.361	376.740
Ethene (nM/L)	0.000	0.000	149.733	698.752	491.979	270.945	0.000	128.342	0.000	0.000	0.000	0.000	49.911	199.643	388.592
Total Molar Conc. (nM/L)	556.40	831.03	505.62	904.99	1286.91	1498.99	18.57	189.58	72.02	1936.44	1870.08	1634.46	981.45	617.86	870.2
% moles PCE	1.2%	6.5%	0.2%	0.0%	0.0%	0.1%	0.0%	0.6%	0.0%	16.8%	17.4%	11.5%	10.2%	0.0%	0.0%
% moles TCE	2.8%	21.9%	0.6%	0.0%	2.3%	1.3%	0.0%	1.3%	2.3%	31.6%	31.3%	21.0%	26.5%	1.7%	0.3%
% moles cis-1,2-DCE	86.3%	55.6%	38.0%	5.9%	24.5%	49.4%	10.6%	7.6%	38.4%	50.8%	50.1%	56.9%	53.3%	25.2%	9.4%
% moles trans-1,2-DCE	1.3%	1.5%	1.6%	3.4%	4.5%	6.4%	89.4%	8.0%	59.3%	0.8%	0.8%	1.4%	0.9%	1.6%	2.4%
% moles Vinyl Chloride	8.4%	14.5%	30.0%	13.5%	30.5%	24.7%	0.0%	14.9%	0.0%	0.0%	0.4%	9.2%	4.0%	39.2%	43.3%
% moles Ethene	0.0%	0.0%	29.6%	77.2%	38.2%	18.1%	0.0%	67.7%	0.0%	0.0%	0.0%	0.0%	5.1%	32.3%	44.7%
sum % moles	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note: 0 sample indicates a non-detect analyte value

Table 28.1.3

B-3 Bioreactor Analytical Summary  
Apr 2013 - Apr 2014

Q28		Bioreactor Active Trench Sumps																													
Well ID		T1-1						T1-2						T1-3						T6-1						T6-2					
Sample Date	Units	4/15/2013		10/10/2013		4/9/2014		4/15/2013		10/10/2013		4/9/2014		4/15/2013		10/10/2013		4/9/2014		4/15/2013		10/10/2013		4/9/2014		4/15/2013		10/10/2013		4/9/2014	
Compound		Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag
Dissolved Organic Carbon	mg/L	8.0		47		5.9		5.7		34		4.0		9.8		79		15		1.9		33		2.1		3.5		98		5.1	
Total Organic Carbon	mg/L	15		18		6.4		6.1		4.4		3.9		10		20		15		2.0		1.9		3.4		3.4		5.9		4.7	
Methane	µg/L	1,630		34		525		3,140		1,420		216		2,920		6,990		9,350		11		1.6		17		66		1,290		1,200	
Ethene	µg/L	0		0		4.2		20		14		7.6		0		3.6		0		0		0		0		1.4	F	5.6		11	
Ethane	µg/L	1.7	F	0		1.8	F	6.3		4.0		0		5.5		5.0		9.1		0		0		0		0		4.4		4.6	
Carbon Dioxide	µg/L	127,000		118,000		212,000		133,000		66,900		59,600		107,000		193,000		146,000		61,500		43,300		50,000		94,200		178,000		126,000	
Sulfate	mg/L	17		32		19		8.8		21		27		4.0		14		1.0		27		26		32		25		20		15	
Chloride	mg/L	15		14		16		15		13		16		15		14		16		15		13		16		15		14		16	
Ferrous Iron	mg/L	7.0		1.8		4.7		4.3		8.0		2.9		3.3		10		6.2		0.31	F	0.19	F	0.48	F	0.63	F	3.4		4.7	
Manganese	µg/L	150		18		335		166		68		57		376		391		402		21		7.0		124		32		69		204	
Hydrogen	nM	0		0		15		15		18		0		6.0		0		0		0		0		0		9.4		12		17	
Sulfide	mg/L	0		0		3.5	F	0		0		0		6.0		548		506		374		385		367		406		399		408	
Total Dissolved Solids	mg/L	457		484		516		439		377		410		526		548		506		374		385		367		406		399		408	
Benzene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Bromodichloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Bromoform	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Chloroform	µg/L	0		0.070	F	0		0		0		0		0		0		0		0		0.10	F	0		0		0		0	
Dibromochloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Dichloroethene, cis-1,2-	µg/L	47		45		19		5.2		31		72		0.19	F	1.4		2.7		95		91		90		51		15		7.9	
Dichloroethene, trans-1,2-	µg/L	0.71		1.2		0.80		3.0		5.6		9.3		1.6		1.5		4.1		1.5		1.5		2.1		0.82		0.94		2.0	
Methylene chloride	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Naphthalene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Tetrachloroethene	µg/L	1.1	F	8.9		0.15	F	0		0		0.23	F	0		0.19	F	0		54		54		31		17		0		0	
Toluene	µg/L	0		0		0		0.21	F	0		0		0		0.20	F	0		0		0		0		0		0		0	
Trichloroethene	µg/L	2.0		24		0.39	F	0		3.9		2.6		0		0.32	F	0.22	F	80		77		45		34		1.3		0.34	F
Vinyl chloride	µg/L	2.9		7.5		9.5		7.6		25		23		0		1.8		0		0		0.45	F	9.4		2.4		15		24	
Arsenic	µg/L	8.7		7.4	F	0.80	F	0		0		1.7	F	0.50	F	1.3	F	2.3	F	1.4	F	0		1.2	F	0.70	F	0		0.70	F
		Month 72		Month 78		Month 84		Month 72		Month 78		Month 84		Month 72		Month 78		Month 84		Month 72		Month 78		Month 84		Month 72		Month 78		Month 84	

Note: 0 sample indicates a non-detect analyte value

Table 28.2.2

**Upper Saturated Zone (Zone 03B) VOC Summary**  
**Apr 2013 - Apr 2014**

Q28 Date	CS-WB06-LGR03B			CS-WB07-LGR03B		
	4/9/2013	10/23/2013	4/15/2014	4/2/2013	10/22/2013	4/14/2014
PCE (µg/L)	118	58	67	2.6	7.0	1.7
TCE (µg/L)	154	98	101	8.9	12	2.3
cis-1,2-DCE (µg/L)	246	188	199	15	19	15
trans-1,2-DCE (µg/L)	1.8	1.2	3.3	0.45	0.28	0.43
Vinyl chloride (µg/L)	0	0	0	0	0	0
Ethene (µg/L)	0	0	0	0	0	0
PCE (nM/L)	713.562	347.042	403.365	15.920	42.513	10.312
TCE (nM/L)	1173.301	745.338	770.607	67.889	92.625	17.581
cis-1,2-DCE (nM/L)	2535.946	1938.834	2048.788	157.710	191.851	155.750
trans-1,2-DCE (nM/L)	19.082	12.687	34.038	4.642	2.888	4.435
Vinyl chloride (nM/L)	0.000	0.000	0.000	0.000	0.000	0.000
Ethene (nM/L)	0.000	0.000	0.000	0.000	0.000	0.000
Total Molar Conc. (nM/L)	4441.89	3043.90	3256.80	246.16	329.88	188.1
% moles PCE	16.1%	11.4%	12.4%	6.5%	12.9%	5.5%
% moles TCE	26.4%	24.5%	23.7%	27.6%	28.1%	9.3%
% moles cis-1,2-DCE	57.1%	63.7%	62.9%	64.1%	58.2%	82.8%
% moles trans-1,2-DCE	0.4%	0.4%	1.0%	1.9%	0.9%	2.4%
% moles Vinyl Chloride	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% moles Ethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
sum % moles	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note: 0 sample indicates a non-detect analyte value

Table 28.2.3a

B-3 Bioreactor Multi-Port Well CS-WB05 Analytical Summary  
Apr 2013 - Apr 2014

Q28		CS-WB05																																						
Well ID		CS-WB05-LGR-01						CS-WB05-LGR-04A						CS-WB05-LGR-04B						CS-WB05-BS-01						CS-WB05-CC-01						CS-WB05-CC-02								
Sample Date		4/8/2013		10/29/2013		4/23/2014		4/8/2013		10/29/2013		4/22/2014		4/4/2013		10/29/2013		4/22/2014		4/4/2013		10/28/2013		4/22/2014		4/4/2013		10/28/2013		4/22/2014		4/4/2013		10/28/2013		4/22/2014				
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag			
Dissolved Organic Carbon	mg/L	0.50		1.4		1.2		1.6		2.0		1.3		1.1		2.0		1.2		0.20	F	1.0		0.95		0.43	F	1.6		0.98		0.32	F	1.2		1.0				
Total Organic Carbon	mg/L	0.50		0.79		1.3		0.78		1.4		1.5		1.1		1.6		1.3		0.18	F	1.4		0.83		1.0		0.97		0.85		0.39	F	0.95		0.68				
Methane	µg/L	4.7		15		6.9		412		2,170		219		2,800		8,790		2,780		46		61		35		1.8		3.0		4.3		9.8		4.6		3.2				
Ethane	µg/L	0		0		0		1.9	F	4.3		1.0	F	23		36		16		0		0		0		0		0		0		0		0		0		0		
Ethene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		
Carbon Dioxide	µg/L	30,400		37,800		45,700		17,100		38,600		11,000		49,600		92,200		80,700		12,700		17,800		12,500		9,970		17,300		24,700		23,500		25,500		4,250	F			
Sulfate	mg/L	100		108		97		26		27		24		7.5		8.1		7.0		32		34		31		84		90		82		99		105		82				
Chloride	mg/L	14		13		13		12		12		11		13		12		12		12		12		11		18		17		16		19		18		18		18		
Ferrous Iron	mg/L	0		0		0.18	F	0.52	F	0		0.37	F	0		0		0.24	F	0		0		0.20	F	0.65	F	0.23	F	0.40	F	0		0		0.28	F			
Manganese	µg/L	1.7	F	0		0		7.0		6.0		7.0		42		25		32		25		0		2.0	F	0		2.0	F	3.0	F	0		3.0	F	0		0		
Sulfide	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		4.8	F	0		0		0		
Total Dissolved Solids	mg/L	513		539		520		340		364		350		359		356		333		335		345		331		411		432		407		443		449		434				
Benzene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		
Bromodichloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		
Bromoform	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		
Chloroform	µg/L	0		0		0		0		0		0		0.070	F	0.10	F	0.13	F	0		0		0		0		0		0		0		0		0		0		
Dibromochloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		
Dichloroethene, 1,1-	µg/L	0		0		0.21	F	0.17	F	0		0		0.22	F	0		0		0		0		0		0		0		0		0		0		0		0		
Dichloroethene, cis-1,2-	µg/L	2.1		3.6		2.2		405		418		342		191		289		185		15		19		22		1.1	F	1.5		0.78	F	17		12		14		14		
Dichloroethene, trans-1,2-	µg/L	0.83		1.2		0.89		9.9		13		15		2.5		5.3		2.9		0		0		0.26	F	0.64	F	1.2		0.54	F	9.9		6.4		9.8		9.8		
Methylene chloride	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		
Naphthalene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		
Tetrachloroethene	µg/L	0.20	F	0.50	F	0.22	F	0		1.8		1.5		59		129		125		0		0		0		0		0		0		0		0		0		0		
Toluene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		
Trichloroethene	µg/L	0.74	F	0.84	F	0.55	F	4.8		4.0		1.7		100		241		155		0		0		1.6		2.0		0.60	F	4.6		1.5		1.9		1.9				
Vinyl chloride	µg/L	0		0.42	F	0		86		50		93		72		140		53		2.2		3.0		7.7		0		0		0		0		0		0		0		
Arsenic	µg/L	0		1.0	F	0		0		1.5	F	0		14		5.4	F	1.5	F	0		0		0		0		0.50	F	0		0.30	F	0		0		0		
		Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84

Note: 0 sample indicates a non-detect analyte value

Table 28.2.3b

B-3 Bioreactor Multi-Port Well CS-WB06 Analytical Summary  
Apr 2013 - Apr 2014

Well ID	CS-WB06																																						
	CS-WB06-UGR-01						CS-WB06-LGR-01						CS-WB06-LGR-02						CS-WB06-LGR03A						CS-WB06-LGR03B						CS-WB06-LGR-04								
	4/9/2013	10/24/2013	4/16/2014	4/9/2013	10/24/2013	4/16/2014	4/9/2013	10/24/2013	4/16/2014	4/9/2013	10/24/2013	4/16/2014	4/9/2013	10/24/2013	4/15/2014	4/9/2013	10/23/2013	4/15/2014	4/9/2013	10/23/2013	4/15/2014	4/9/2013	10/23/2013	4/15/2014	4/9/2013	10/23/2013	4/15/2014												
Sample Date	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag							
Units																																							
Dissolved Organic Carbon	mg/L	1.4		5.9		5.7		0		5.2		2.5		0.70		1.0		1.4		0.64		2.8		1.0		0.68		3.6		1.0		0.97		3.7		1.1			
Total Organic Carbon	mg/L	1.6		2.3		5.3		1.8		2.2		1.9		0.62		2.0		1.0		0.42	F	1.3		0.65		1.1		1.0		0.87		0.75		1.2		1.0			
Methane	µg/L	10		60		2,890		0		0		0		1.8		1.7		7.3		0		0		0		0		0		0		0		3.8		1.0	F		
Ethene	µg/L	0		0		1.3	F	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0			
Ethane	µg/L	0		0		2.5		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0			
Carbon Dioxide	µg/L	13,000		56,800		159,000		42,000		18,900		80,400		19,200		10,100		25,200		11,500		23,200		47,400		16,900		21,000		29,400		52,100		22,100		50,000			
Sulfate	mg/L	19		18		6.7		22		22		23		26		27		25		19		20		19		20		20		19		12		12		12			
Chloride	mg/L	15		14		1.6		15		14		14		11		10		9.6		12		12		12		12		12		12		14		14		14			
Ferrous Iron	mg/L	0.53	F	0.33	F	1.6		0		0		0		0		0		0.40	F	0		0		0		0		0.18	F	0.38	F	0		0		0			
Manganese	µg/L	3,020		966		1,880		20		39	F	0		0		0		0		0		2.0	F	0		0		0		0		0		0		0			
Sulfide	mg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0			
Total Dissolved Solids	mg/L	385		391		510		422		402		443		319		315		336		327		315		336		324		341		320		357		368		354			
Benzene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0			
Bromodichloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0			
Bromoform	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0			
Chloroform	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0.11	F	0		0		0		0		0.080	F	0	
Dibromochloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0			
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0			
Dichloroethene, 1,1-	µg/L	0.28	F	0		0		0		0		0		0		0		0		0		0		0		0		0.42	F	0.16	F	0		0		0			
Dichloroethene, cis-1,2-	µg/L	169		109		60		30		21		28		24		26		17		186		143		182		246		188		143		142		145		145			
Dichloroethene, trans-1,2-	µg/L	0.36	F	0.37	F	5.3		0		0.26	F	1.2		0.51	F	0.45	F	0.39	F	1.7		1.1		1.7		1.8		1.2		3.3		1.2		1.6		1.1			
Methylene chloride	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0			
Naphthalene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0			
Tetrachloroethene	µg/L	20		9.9		0.25	F	20		7.7		15		4.3		4.6		0.50	F	97		53		55		118		58		67		83		67		43			
Toluene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0			
Trichloroethene	µg/L	26		15		3.7		17		8.6		17		11		10		2.9		133		86		91		154		98		101		50		56		34			
Vinyl chloride	µg/L	1.0	F	0		9.8		0		0		0		0.58	F	0.54	F	0.43	F	0		0		0		0		0		0		0		0.26	F	0			
Arsenic	µg/L	6.4		0		2.7	F	0		0		0		0		0		0.50	F	0		0.40	F	0		0.30	F	0		0		0		0		0			
		Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84	Q24-Month 72	Q26-Month 78	Q28-Month 84		

Note: 0 sample indicates a non-detect analyte value



Table 28.2.3c

B-3 Bioreactor Multi-Port Well CS-WB07 Analytical Summary  
Apr 2013 - Apr 2014

Q28		CS-WB07																							
Well ID		CS-WB07-LGR-01						CS-WB07-LGR-02						CS-WB07-LGR03B						CS-WB07-LGR-04					
Sample Date		4/3/2013		10/23/2013		4/14/2014		4/3/2013		10/23/2013		4/14/2014		4/2/2013		10/22/2013		4/14/2014		4/2/2013		10/22/2013		4/14/2014	
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag
Dissolved Organic Carbon	mg/L	1.7		4.9		2.6		1.3		3.3		0.97		0.30	F	3.1		0.91		0.26	F	2.9		1.2	
Total Organic Carbon	mg/L	2.1		2.2		2.7		0.62		2.1		0.94		0.26	F	1.9		0.82		2.7	F	1.4		1.0	
Methane	µg/L	637		543		727		81		35		71		2.3		6.1		5.1		0		0		0	
Ethene	µg/L	5.2		6.9		8.3		10		0		0		0		0		0		0		0		0	
Ethane	µg/L	0		0		1.9	F	0		0		0		0		0		0		0		0		0	
Carbon Dioxide	µg/L	60,100		58,400		79,700		13,300		10,500		23,500		16,700		35,500		28,600		22,400		60,700		37,500	
Sulfate	mg/L	15		10		14		41		38		34		23		24		23		10		11		11	
Chloride	mg/L	17		16		18		14		13		12		10		9.9		9.7		13		12		12	
Ferrous Iron	mg/L	2.1		1.9		1.8		0.56	F	0		0.16	F	0.25	F	0		0.18	F	0.41	F	0		0	
Manganese	µg/L	601		469		522		43		29		26		2.4	F	0		0		1.8	F	0		0	
Sulfide	mg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Total Dissolved Solids	mg/L	394		380		422		376		379		358		320		336		320		322		275		321	
Benzene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Bromodichloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Bromoform	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Chloroform	µg/L	0		0		0		0		0		0		0		0		0		0.27	F	0.30		0.17	F
Dibromochloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0		0		0		0		0.40	F	0.43	F	0.33	F
Dichloroethene, cis-1,2-	µg/L	86		78		92		1.1	F	7.0		6.3		15		19		15		496		454		391	
Dichloroethene, trans-1,2-	µg/L	2.8		5.2		4.8		0		0.37	F	0.44	F	0.45	F	0.28	F	0.43	F	3.0		3.2		1.9	
Methylene chloride	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Naphthalene	µg/L	0		0		0		0		0		0		1.6		0		0		0		0		0	
Tetrachloroethene	µg/L	0		0		0		0		0.56	F	2.4		2.6		7.0		1.7		350		282		210	
Toluene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Trichloroethene	µg/L	5.3		4.1		21		0		1.8		5.5		8.9		12		2.3		401		349		256	
Vinyl chloride	µg/L	11		8.4		7.6		0.68	F	1.3		0.70	F	0		0		0		0		0		0	
Arsenic	µg/L	1.6	F	0.90	F	0.60	F	0		0		0		1.5	F	0.90	F	0		0		0		0	
		Q24-Month 72		Q26-Month 78		Q28-Month 84		Q24-Month 72		Q26-Month 78		Q28-Month 84		Q24-Month 72		Q26-Month 78		Q28-Month 84		Q24-Month 72		Q26-Month 78		Q28-Month 84	

Note: 0 sample indicates a non-detect analyte value

Table 28.2.3d

B-3 Bioreactor Multi-Port Well CS-WB08 Analytical Summary  
Apr 2013 - Apr 2014

Q28		CS-WB08																							
Well ID		CS-WB08-UGR-01						CS-WB08-LGR-01						CS-WB08-LGR-02						CS-WB08-LGR-04					
Sample Date		4/1/2013		10/25/2013		4/17/2014		4/1/2013		10/25/2013		4/17/2014		4/1/2013		10/25/2013		4/17/2014		4/1/2013		10/24/2013		4/16/2014	
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag
Dissolved Organic Carbon	mg/L	1.6		2.0		1.7		0.80		1.5		0.75		1.4		1.4		1.0		1.8		6.0		2.3	
Total Organic Carbon	mg/L	1.7		2.8		1.6		0.45	F	1.4		0.77		0.34	F	1.7		1.3		1.7		3.6		2.2	
Methane	µg/L	324		308		251		0		0		0		6.0		4.4		3.0		0		1.0	F	6.2	
Ethene	µg/L	7.3		8.7		11		0		0		0		0		0		0		0		0		0	
Ethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Carbon Dioxide	µg/L	25,000		27,800		29,600		21,300		13,000		32,300		42,200		25,900		14,200		17,200		109,000		26,300	
Sulfate	mg/L	17		14		15		103		110		101		107		109		102		19		17		15	
Chloride	mg/L	15		15		15		12		11		11		12		11		11		17		15		17	
Ferrous Iron	mg/L	0.70	F	1.2		1.6		0.43	F	0		0		0.18	F	0.26	F	0.22	F	0.52	F	0		0.20	F
Manganese	µg/L	766		570		586		0		3.0	F	0		0		0		0		25		58		27	
Sulfide	mg/L	0		0		0		3.2	F	0		0		0		0		0		0		0		0	
Total Dissolved Solids	mg/L	376		367		383		522		539		537		527		537		536		422		407		439	
Benzene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Bromodichloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Bromoform	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Chloroform	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Dibromochloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Dichloroethene, cis-1,2-	µg/L	97		167		127		25		42		28		14		20		7.6		66		50		31	
Dichloroethene, trans-1,2-	µg/L	1.8		1.5		5.4		1.9		4.2		3.0		0.27	F	0.50	F	0		0.28	F	0.30	F	0.88	
Methylene chloride	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Naphthalene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Tetrachloroethene	µg/L	0		0.36	F	0		0		1.4	F	0		3.5		3.6		0		3.0		2.3		0.77	F
Toluene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Trichloroethene	µg/L	1.2		0.61	F	0.44	F	0		1.1		0.17	F	2.0		1.7		0.23	F	7.3		5.4		1.8	
Vinyl chloride	µg/L	68		49		85		0		0.81	F	0.34	F	0.30	F	0.42	F	0.45	F	0		0		0.21	F
Arsenic	µg/L	3.0	F	0.60	F	0		0		0		0		0		0		0		0		0		0	
		Q24-Month 72		Q26-Month 78		Q28-Month 84		Q24-Month 72		Q26-Month 78		Q28-Month 84		Q24-Month 72		Q26-Month 78		Q28-Month 84		Q24-Month 72		Q26-Month 78		Q28-Month 84	

Note: 0 sample indicates a non-detect analyte value

Table 28.3.3

B-3 Bioreactor Monitoring Well Analytical Summary  
Apr 2013 - Apr 2014

Q28		Monitoring Wells											
Well ID		CS-MW1-LGR						CS-B3-MW01					
Sample Date		4/11/2013		10/17/2013		4/11/2014		4/11/2013		10/17/2013		4/11/2014	
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag
Dissolved Organic Carbon	mg/L	0.69		3.2		0.83		5.4		152		4.6	
Total Organic Carbon	mg/L	0		0.62		0.79		5.4		5.1		5.0	
Methane	µg/L	0		0		0		892		201		523	
Ethene	µg/L	0		0		0		0		0		0	
Ethane	µg/L	0		0		0		0		0		0	
Carbon Dioxide	µg/L	40,600		27,000		19,600		123,000		38,000		75,800	
Sulfate	mg/L	15		16		14		2.9		1.9		2.0	
Chloride	mg/L	8.8		8.9		9.0		12		11		12	
Ferrous Iron	mg/L	0		0.38	F	0		0.80	F	1.0		1.3	
Manganese	µg/L	0		0		0		158		132		146	
Hydrogen	nM	16		13		0.72							
Sulfide	mg/L	0		0		0		0		0		0	
Total Dissolved Solids	mg/L	308		299		304		598		560		630	
Benzene	µg/L	0		0		0		0		0		0	
Bromodichloromethane	µg/L	0		0		0		0		0		0	
Bromoform	µg/L	0		0		0		0		0		0	
Chloroform	µg/L	0.15	F	0.10	F	0.14	F	0		0		0	
Dibromochloromethane	µg/L	0		0		0		0		0		0	
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0	
Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0	
Dichloroethene, cis-1,2-	µg/L	20		18		26		0.21	F	0		0	
Dichloroethene, trans-1,2-	µg/L	0.20	F	0.26	F	0.57	F	0.30	F	0.38	F	0.54	F
Methylene chloride	µg/L	0		0		0		0		0		0	
Naphthalene	µg/L	0		0		0		0		0		0	
Tetrachloroethene	µg/L	15		13		17		0		0		0	
Toluene	µg/L	0		0		0		0		0		0	
Trichloroethene	µg/L	33		28		38		0		0		0	
Vinyl chloride	µg/L	0		0		0		16		13		13	
Arsenic	µg/L	0		0		0		0		0		0	

Note: 0 sample indicates a non-detect analyte value

Table 28.4.4

**SWMU B-3 Microbial Data Summary**  
**Apr 2013 - Apr 2014**

<b>Trench Sump</b>				
<b>B3-T1-2</b>	<b>Sample Date:</b>	<b>4/15/2013</b>	<b>10/10/2013</b>	<b>4/9/2014</b>
<b>Dechlorinating Bacteria</b>	<b>Units</b>			
Dehalococcoides spp (1)	cells/mL	7.61E+03	3.62E+04	7.29E+03
<b>Functional Genes</b>	<b>Units</b>			
TCE R-Dase (1)	cells/mL	6.89E+03	5.22E+03	1.27E+02
BAV1 VC R-Dase (1)	cells/mL	1.55E+03	5.44E+03	7.21E+02
VC R-Dase	cells/mL	2.19E+01	5.52E+02	9.00E+02
<b>B3-T6-2</b>	<b>Sample Date:</b>	<b>4/15/2013</b>	<b>10/10/2013</b>	<b>4/9/2014</b>
<b>Dechlorinating Bacteria</b>	<b>Units</b>			
Dehalococcoides spp (1)	cells/mL	8.71E+02	2.08E+04	1.25E+04
<b>Functional Genes</b>	<b>Units</b>			
TCE R-Dase (1)	cells/mL	8.89E+02	9.05E+03	4.50E+02
BAV1 VC R-Dase (1)	cells/mL	3.63E+02	2.91E+03	3.65E+03
VC R-Dase	cells/mL	3.00E-01 F	4.35E+01	1.45E+03
<b>Extraction Wells</b>				
<b>CS-MW16-LGR</b>	<b>Sample Date:</b>	<b>4/11/2013</b>	<b>10/7/2013</b>	<b>4/7/2014</b>
<b>Dechlorinating Bacteria</b>	<b>Units</b>			
Dehalococcoides spp (1)	cells/mL	< 5.00E-01	1.05E+00	< 5.00E-01
<b>Functional Genes</b>	<b>Units</b>			
TCE R-Dase (1)	cells/mL	< 5.00E-01	< 5.00E-01	< 5.00E-01
BAV1 VC R-Dase (1)	cells/mL	< 5.00E-01	2.00E-01 F	< 5.00E-01
VC R-Dase	cells/mL	< 5.00E-01	< 5.00E-01	< 5.00E-01
<b>Monitoring Wells</b>				
<b>CS-MW1-LGR</b>	<b>Sample Date:</b>	<b>4/11/2013</b>	<b>10/17/2013</b>	<b>4/11/2014</b>
<b>Dechlorinating Bacteria</b>	<b>Units</b>			
Dehalococcoides spp (1)	cells/mL	< 5.00E-01	< 5.00E-01	< 5.00E-01
<b>Functional Genes</b>	<b>Units</b>			
TCE R-Dase (1)	cells/mL	< 5.00E-01	< 5.00E-01	< 5.00E-01
BAV1 VC R-Dase (1)	cells/mL	< 5.00E-01	< 5.00E-01	< 5.00E-01
VC R-Dase	cells/mL	< 5.00E-01	< 5.00E-01	< 5.00E-01
<b>CS-B3-MW01</b>	<b>Sample Date:</b>	<b>--</b>	<b>10/17/2013</b>	<b>4/11/2014</b>
<b>Dechlorinating Bacteria</b>	<b>Units</b>			
Dehalococcoides spp (1)	cells/mL	--	1.85E+03	1.95E+02
<b>Functional Genes</b>	<b>Units</b>			
TCE R-Dase (1)	cells/mL	--	1.42E+03	2.04E+01
BAV1 VC R-Dase (1)	cells/mL	--	< 5.00E-01	< 7.00E-01
VC R-Dase	cells/mL	--	< 5.00E-01	< 7.00E-01
<b>Westbay Wells</b>				
<b>CS-WB05-LGR-04B</b>	<b>Sample Date:</b>	<b>--</b>	<b>10/29/2013</b>	<b>--</b>
<b>Dechlorinating Bacteria</b>	<b>Units</b>			
Dehalococcoides spp (1)	cells/mL	--	3.94E+01	--
<b>Functional Genes</b>	<b>Units</b>			
TCE R-Dase (1)	cells/mL	--	2.29E+01	--
BAV1 VC R-Dase (1)	cells/mL	--	< 5.00E-01	--
VC R-Dase	cells/mL	--	< 5.00E-01	--

Table 28.5.3

**SWMU B3-UIC Analytical Summary Table**  
**Apr 2013 - Apr 2014**

Q28		B3-UIC									
Well ID		B3-UIC									
Sample Date		4/15/2013		7/23/2013		10/10/2013		1/22/2014		4/9/2014	
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag
Total Dissolved Solids	mg/L	384		372		383		383		366	
Benzene	µg/L	0		0		0		0		0	
Bromodichloromethane	µg/L	0		0		0		0		0	
Bromoform	µg/L	0		0		0		0		0	
Chloroform	µg/L	0.17	F	0		0.11	F	0.070	F	0.10	F
Dibromochloromethane	µg/L	0		0		0		0		0	
Dichlorodifluoromethane	µg/L	0		0		0		0		0	
Dichloroethene, 1,1-	µg/L	0		0		0		0		0	
Dichloroethene, cis-1,2-	µg/L	120		104		108		85		114	
Dichloroethene, trans-1,2-	µg/L	2.3		2.3		1.9		3.0		3.4	
Methylene chloride	µg/L	0		0		0		0		0	
Naphthalene	µg/L	0		0		0		0		0	
Tetrachloroethene	µg/L	89		79		81		58		79	
Toluene	µg/L	0		0		0		0		0	
Trichloroethene	µg/L	116		92		106		82		104	
Vinyl chloride	µg/L	0		0		0		0		0	

Table 28.5.2

**Storage Tank (UIC) VOC Summary**  
**Apr 2013 - Apr 2014**

Q28	B3-UIC				
Date	4/15/2013	7/23/2013	10/10/2013	1/22/2014	4/9/2014
PCE (µg/L)	89	79	81	58	79
TCE (µg/L)	116	92	106	82	104
cis-1,2-DCE (µg/L)	120	104	108	85	114
trans-1,2-DCE (µg/L)	2.3	2.3	1.9	3.0	3.4
Vinyl chloride (µg/L)	0	0	0	0	0
Ethene (µg/L)	0	0	0	0	0
PCE (nM/L)	534.945	477.778	488.211	349.153	476.995
TCE (nM/L)	882.487	703.783	810.107	622.650	789.862
cis-1,2-DCE (nM/L)	1240.124	1071.686	1110.263	873.749	1171.738
trans-1,2-DCE (nM/L)	24.136	23.311	19.907	31.047	34.760
Vinyl chloride (nM/L)	0.000	0.000	0.000	0.000	0.000
Ethene (nM/L)	0.000	0.000	0.000	0.000	0.000
Total Molar Conc. (nM/L)	2681.7	2276.6	2428.5	1876.6	2473.4
% moles PCE	19.9%	21.0%	20.1%	18.6%	19.3%
% moles TCE	32.9%	30.9%	33.4%	33.2%	31.9%
% moles cis-1,2-DCE	46.2%	47.1%	45.7%	46.6%	47.4%
% moles trans-1,2-DCE	0.9%	1.0%	0.8%	1.7%	1.4%
% moles Vinyl Chloride	0.0%	0.0%	0.0%	0.0%	0.0%
% moles Ethene	0.0%	0.0%	0.0%	0.0%	0.0%
sum % moles	100.0%	100.0%	100.0%	100.0%	100.0%

Note: 0 sample indicates a non-detect analyte value

Table 28.6.2

B-3 Bioreactor Extraction Well VOC Summary  
Apr 2013 - Apr 2014

Q28	16-LGR			16-CC			EXW01	EXW02		EXW03			EXW04			EXW05			EW-A2
Date	4/11/2013	10/7/2013	4/7/2014	4/11/2013	10/7/2013	4/7/2014	4/7/2014	10/7/2013	4/7/2014	4/5/2013	10/7/2013	4/7/2014	4/5/2013	10/7/2013	4/7/2014	4/5/2013	10/7/2013	4/7/2014	4/9/2014
PCE (µg/L)	133	104	128	0.62	0.34	0.45	117	79	93	96	140	140	157	195	119	22	44	31	0
TCE (µg/L)	161	113	151	11	7.5	8.3	123	92	131	99	150	165	220	224	154	50	63	47	0
cis-1,2-DCE (µg/L)	157	103	139	20	15	18	158	87	125	122	144	162	206	202	126	28	47	30	0
trans-1,2-DCE (µg/L)	0.30	0.19	0.28	7.9	6.0	9.1	1.5	0.67	0.98	0.74	0.63	1.1	1.4	1.1	0.65	0.35	0.28	0.19	0
Vinyl chloride (µg/L)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ethene (µg/L)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCE (nM/L)	804.076	628.234	768.860	3.739	2.050	2.714	704.215	476.572	560.996	577.821	842.791	844.781	944.642	1174.697	715.130	132.063	265.453	189.290	0.000
TCE (nM/L)	1226.349	861.938	1152.980	82.655	57.386	63.171	938.656	701.347	997.488	753.863	1138.138	1255.575	1677.677	1707.360	1169.267	377.198	481.011	358.931	0.000
cis-1,2-DCE (nM/L)	1615.059	1060.547	1430.634	202.166	155.854	186.075	1628.571	901.599	1293.347	1259.103	1488.809	1671.686	2125.632	2088.396	1295.823	289.634	485.921	310.882	0.000
trans-1,2-DCE (nM/L)	3.094	1.960	2.888	81.176	62.300	93.450	15.059	6.911	10.108	7.633	6.498	11.037	14.853	11.759	6.704	3.610	2.888	1.960	0.000
Vinyl chloride (nM/L)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ethene (nM/L)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Molar Conc. (nM/L)	3648.58	2552.68	3355.4	369.74	277.59	345.41	3286.50	2086.43	2861.94	2598.42	3476.24	3783.08	4762.80	4982.21	3186.92	802.50	1235.27	861.06	0.00
% moles PCE	22.0%	24.6%	22.9%	1.0%	0.7%	0.8%	21.4%	22.8%	19.6%	22.2%	24.2%	22.3%	19.8%	23.6%	22.4%	16.5%	21.5%	22.0%	0.0%
% moles TCE	33.6%	33.8%	34.4%	22.4%	20.7%	18.3%	28.6%	33.6%	34.9%	29.0%	32.7%	33.2%	35.2%	34.3%	36.7%	47.0%	38.9%	41.7%	0.0%
% moles cis-1,2-DCE	44.3%	41.5%	42.6%	54.7%	56.1%	53.9%	49.6%	43.2%	45.2%	48.5%	42.8%	44.2%	44.6%	41.9%	40.7%	36.1%	39.3%	36.1%	0.0%
% moles trans-1,2-DCE	0.1%	0.1%	0.1%	22.0%	22.4%	27.1%	0.5%	0.3%	0.4%	0.3%	0.2%	0.3%	0.3%	0.2%	0.2%	0.5%	0.2%	0.2%	0.0%
% moles Vinyl Chloride	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% moles Ethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
sum % moles	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	0.0%

Note: 0 sample indicates a non-detect analyte value

Table 28.6.3

B-3 Bioreactor Extraction Well Analytical Summary  
Apr 2013 - Apr 2014

Well ID	Extraction Wells																														
	CS-MW16-LGR						CS-MW16-CC						B3-EKW01		B3-EKW02				B3-EKW03			B3-EKW04				B3-EKW05			B3-EW-A2		
	4/11/2013	10/7/2013	4/7/2014	4/11/2013	10/7/2013	4/7/2014	4/7/2014	10/7/2013	4/7/2014	4/5/2013	10/7/2013	4/7/2014	4/5/2013	10/7/2013	4/7/2014	4/5/2013	10/7/2013	4/7/2014	4/5/2013	10/7/2013	4/7/2014	4/5/2013	10/7/2013	4/7/2014	4/5/2013	10/7/2013	4/7/2014	4/5/2013	10/7/2013	4/7/2014	
Sample Date	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	
Compound	Units																														
Dissolved Organic Carbon	mg/L	1.8		0.91		1.2		0.17	F	0.72		0.88		1.1		1.6		1.1		1.4		2.2		1.3		1.1		1.9		0.91	
Total Organic Carbon	mg/L	0.24	F	1.9		0.65		0.56		0.55		0.70		0.79		1.5		0.61		1.3		3.5		1.5		0.56		1.9		0.75	
Methane	µg/L	1.9		1.8		1.4		6.9		7.2		7.0		0		0		0		0		0		0		0		0		0	
Ethene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Ethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Carbon Dioxide	µg/L	33,500		40,600		28,300		26,700		26,100		20,200		21,900		63,500		46,500		60,800		86,300		70,300		30,800		52,700		42,400	
Sulfate	mg/L	17		18		18		71		0		82		16		14		14		19		13		14		8.9		8.3		18	
Chloride	mg/L	10.0		9.7		11		18		17		20		13		12		14		21		13		16		13		12		9.5	
Ferrous Iron	mg/L	0		0		0		0.22	F	0.42	F	0.34	F	1.8		0		0		0.38	F	0.23	F	0.20	F	0.37	F	0.16	F	0.87	F
Manganese	µg/L	0		0		0		0		0		7.0		0		0		0		44		43		96		0		0		7.0	
Hydrogen	nM	16		14		23																									
Sulfide	mg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Total Dissolved Solids	mg/L	330		325		322		418		429		410		355		357		357		386		388		391		327		332		362	
Benzene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Bromodichloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Bromoform	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Chloroform	µg/L	0.18	F	0.11	F	0.14	F	0		0		0		0.11	F	0.14	F	0.13	F	0.15	F	0.15	F	0.25	F	0.23	F	0.13	F	0.16	F
Dibromochloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0		0		0		0		0.16	F	0		0.19	F	0.21	F	0		0	
Dichloroethene, cis-1,2-	µg/L	157		103		139		20		15		18		158		87		125		122		144		162		206		202		126	
Dichloroethene, trans-1,2-	µg/L	0.30	F	0.19	F	0.28	F	7.9		6.0		9.1		1.5		0.67		0.98		0.74		0.63		1.1		206		1.4		1.1	
Methylene chloride	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Naphthalene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Tetrachloroethene	µg/L	133		104		128		0.62	F	0.34	F	0.45	F	117		79		93		96		140		157		195		119		22	
Toluene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Trichloroethene	µg/L	161		113		151		11		7.5		8.3		123		92		131		99		150		165		220		224		154	
Vinyl chloride	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Arsenic	µg/L	0		0		1.9	F	1.1	F	2.2	F	1.6	F	0		0		0.30	F	0		1.5	F	0		0		0.70	F	0	

Note: 0 sample indicates a non-detect analyte value



Table 28.7.1

SWMU B3 Shallow UGR Well - Field Measurement Data  
April 2013 - April 2014

B3-MW-26								
Elev. (ft. MSL)		1238.49		Total Depth: 20.32 feet BTOC				
Sample Date	Sample Time	Depth to H <sub>2</sub> O (ft. BTOC)	pH	Temperature (°C)	Specific Conductivity (m-mho/cm)	Dissolved Oxygen (mg/L)	ORP (eV)	H <sub>2</sub> O Elevation (feet)
4/12/2013	915	12.87	6.77	19.45	0.709	0.61	172.90	1225.62
10/9/2013	1400	12.99	6.49	24.07	0.428	1.26	53.60	1225.50
4/10/2014	900	13.43	6.18	19.33	0.597	0.86	245.80	1225.06

B3-MW-28								
Elev. (ft. MSL)		1226.67		Total Depth: 18.33 feet BTOC				
Sample Date	Sample Time	Depth to H <sub>2</sub> O (ft. BTOC)	pH	Temperature (°C)	Specific Conductivity (m-mho/cm)	Dissolved Oxygen (mg/L)	ORP (eV)	H <sub>2</sub> O Elevation (feet)
4/12/2013		Dry		Not enough water for field readings				Dry
10/9/2013	1130	18.29		Not enough water for field readings				Dry
4/10/2014		18.30		Not enough water for field readings				Dry

B3-MW-30								
Elev. (ft. MSL)		1246.01		Total Depth: 23.90 feet BTOC				
Sample Date	Sample Time	Depth to H <sub>2</sub> O (ft. BTOC)	pH	Temperature (°C)	Specific Conductivity (m-mho/cm)	Dissolved Oxygen (mg/L)	ORP (eV)	H <sub>2</sub> O Elevation (feet)
4/12/2013	1015	23.10	6.93	19.7	0.797	5.58	173.8	1222.91
10/9/2013	1116	23.61		Not enough water for field readings				1222.40
4/10/2014		23.54		Not enough water for field readings				1222.47

B3-MW-32								
Elev. (ft. MSL)		1266.98		Total Depth: 58.45 feet BTOC				
Sample Date	Sample Time	Depth to H <sub>2</sub> O (ft. BTOC)	pH	Temperature (°C)	Specific Conductivity (m-mho/cm)	Dissolved Oxygen (mg/L)	ORP (eV)	H <sub>2</sub> O Elevation (feet)
4/12/2013	1100	40.24	7.12	21.83	0.626	6.09	122.2	1226.74
10/9/2013	1010	55.91	6.91	21.70	0.439	3.87	172.2	1211.07
4/10/2014	1100	54.98	6.51	20.98	0.432	4.82	170.8	1212.00

B3-MW-34								
Elev. (ft. MSL)		1244.51		Total Depth: 25.40 feet BTOC				
Sample Date	Sample Time	Depth to H <sub>2</sub> O (ft. BTOC)	pH	Temperature (°C)	Specific Conductivity (m-mho/cm)	Dissolved Oxygen (mg/L)	ORP (eV)	H <sub>2</sub> O Elevation (feet)
4/12/2013	1150	18.10	6.93	21.24	0.712	2.64	30.5	1226.41
10/9/2013	1420	18.17	6.61	24.66	0.428	1.00	-2.5	1226.34
4/10/2014	1145	18.72	6.38	21.80	0.525	0.58	-25.8	1225.79

B3-MW-27								
Elev. (ft. MSL)		1233.42		Total Depth: 17.00 feet BTOC				
Sample Date	Sample Time	Depth to H <sub>2</sub> O (ft. BTOC)	pH	Temperature (°C)	Specific Conductivity (m-mho/cm)	Dissolved Oxygen (mg/L)	ORP (eV)	H <sub>2</sub> O Elevation (feet)
4/12/2013	940	8.41	6.82	19.20	0.707	0.25	25.0	1225.01
10/9/2013	1340	8.59	6.75	25.70	0.442	0.94	13.3	1224.83
4/10/2014	915	8.86	6.18	18.32	0.532	1.08	-23.1	1224.56

B3-MW-29								
Elev. (ft. MSL)		1233.25		Total Depth: 20.40 feet BTOC				
Sample Date	Sample Time	Depth to H <sub>2</sub> O (ft. BTOC)	pH	Temperature (°C)	Specific Conductivity (m-mho/cm)	Dissolved Oxygen (mg/L)	ORP (eV)	H <sub>2</sub> O Elevation (feet)
4/12/2013	10	20.02		Not enough water for field readings				1213.23
10/9/2013	1130	19.99		Not enough water for field readings				1213.26
4/10/2014		19.92		Not enough water for field readings				1213.33

B3-MW-31								
Elev. (ft. MSL)		1257.20		Total Depth: 39.06 feet BTOC				
Sample Date	Sample Time	Depth to H <sub>2</sub> O (ft. BTOC)	pH	Temperature (°C)	Specific Conductivity (m-mho/cm)	Dissolved Oxygen (mg/L)	ORP (eV)	H <sub>2</sub> O Elevation (feet)
4/12/2013	1040	34.89	6.90	20.95	0.815	2.83	58.2	1222.31
10/9/2013	1100	35.48	6.75	22.76	0.514	1.78	-15.5	1221.72
4/10/2014	1000	35.20	6.31	21.22	0.622	0.66	-59.1	1222.00

B3-MW-33								
Elev. (ft. MSL)		1249.55		Total Depth: 29.55 feet BTOC				
Sample Date	Sample Time	Depth to H <sub>2</sub> O (ft. BTOC)	pH	Temperature (°C)	Specific Conductivity (m-mho/cm)	Dissolved Oxygen (mg/L)	ORP (eV)	H <sub>2</sub> O Elevation (feet)
4/12/2013	1130	23.03	6.90	21.06	0.732	3.44	159.1	1226.52
10/9/2013	1200	23.09	6.73	22.47	0.469	1.33	48.7	1226.46
4/10/2014	1120	23.68	6.31	21.05	0.548	1.69	233.5	1225.87

Table 28.7.3

B-3 Bioreactor UGR Well Analytical Summary  
Apr 2013 - Apr 2014

Q28		Shallow UGR Wells																																						
Well ID		B3-MW26-UGR						B3-MW27-UGR						B3-MW30-UGR						B3-MW31-UGR						B3-MW32-UGR						B3-MW33-UGR								
Sample Date	Compound	4/12/2013	10/9/2013	4/10/2014	4/12/2013	10/9/2013	4/10/2014	4/12/2013	10/9/2013	4/10/2014	4/12/2013	10/9/2013	4/10/2014	4/12/2013	10/9/2013	4/10/2014	4/12/2013	10/9/2013	4/10/2014	4/12/2013	10/9/2013	4/10/2014	4/12/2013	10/9/2013	4/10/2014	4/12/2013	10/9/2013	4/10/2014												
	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag											
	Dissolved Organic Carbon	mg/L	2.4		3.6		3.4		3.3		5.0		2.7		3.6		3.1		3.0		2.3		1.4		2.7		2.0		2.9		2.8		4.0		7.1					
	Total Organic Carbon	mg/L	2.5		3.2		3.9		2.5		4.9		2.9		4.9		3.2		63		2.9		1.2		4.8		20		3.0		3.4		3.5		6.7		8.6			
	Methane	µg/L	198		1,610		2,940		1,250		690		0		0		0		0		0		0		0		0		7.9		0		1,230		1,870		4.0			
	Ethene	µg/L	0		9.0		4.7		2.6	F	2.5	F	2.7	F	0		0		0		0		0		0		0		0		0		6.3		17		4.0			
	Ethane	µg/L	0		2.4		4.9		1.7	F	1.1	F	2.1		0		0		0		0		0		0		0		0		0		2.3		2.4		4.7			
	Carbon Dioxide	µg/L	58,700		168,000		131,000		102,000		203,000		75,100		72,300		105,000		99,100		45,900		56,500		55,800		24,000		89,100		101,000		53,800		80,400		95,400		77,400	
	Sulfate	mg/L	25		21		6.9		16		11		12		46		83		87		63		18		19		21		25		25		12		9.9		5.1			
	Chloride	mg/L	15		14		16		15		14		17		13		10		10		12		12		9.4		12		12		12		16		17		14		17	
	Ferrous Iron	mg/L	0		0.46	F	0.52	F	0.36	F	0.44	F	0.53	F	0.89	F	6.3		1.4		1.4		3.1		1.4		0		0.19	F	0.35	F	0.59	F	1.4		3.9			
	Manganese	µg/L	587		594		810		148		162		199		138		132		259		108		267		167		68		1,690		296		3,890		959		707		983	
	Sulfide	mg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
	Total Dissolved Solids	mg/L	425		411		455		446		413		411		486		518		540		476		378		358		290		444		423		413		430		387		392	
	Benzene	µg/L	0		0		0.21	F	0		0		0		0		0		0.35	F	0		0		0		0		0		0		0.22	F	0		0.32	F		
	Bromodichloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
	Bromoform	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
	Chloroform	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
	Dibromochloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
	Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
	Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
	Dichloroethene, cis-1,2-	µg/L	87		40		7.1		31		7.7		30		0.22	F	10		12		19		178		8.4		16		7.0		11		2.8		87		35		0.66	F
	Dichloroethene, trans-1,2-	µg/L	2.5		2.6		2.8		1.3		3.0		4.6		1.2		0.76		2.3		0.81		0.23	F	0.35	F	0.21	F	0.73		0		2.9		4.5		3.4			
	Methylene chloride	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
	Naphthalene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
	Tetrachloroethene	µg/L	0.32	F	0		0.25	F	0		0		0		5.8		8.0		1.3	F	6.7		28		18		14		12		13		15		0.35	F	0		0	
	Toluene	µg/L	0		0		0		0		0		0.37	F	0		0		0		0		0		0.20	F	0		0		0		0		0		0		0	
	Trichloroethene	µg/L	2.4		0.16	F	0.28	F	0		0		0.32	F	0.77	F	3.2		1.2		5.4		21		6.0		6.7		4.2		6.4		7.7		0.16	F	0		0	
	Vinyl chloride	µg/L	15		36		7.6		19		14		33		0		0		0.87	F	0		0.43	F	0		0		0		0.28	F	0		5.4		63		2.2	
	Arsenic	µg/L	0.70	F	0		2.4	F	0		1.0	F	2.4	F	0.50	F	0		1.6	F	0		4.5	F	2.2	F	2.4	F	0		0		0		3.2	F	1.8	F	5.9	F

Note: 0 sample indicates a non-detect analyte value